

**ENVIRONMENTAL IMPACT OF ETHNIC CONFLICT
AND TERRORISM IN SOUTH-ASIA**

*Dissertation submitted to the Jawaharlal Nehru University
in partial fulfilment of the requirements
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MASTER OF PHILOSOPHY

Submitted by

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21 July, 1994

C E R T I F I C A T E

Certified that this dissertation entitled **ENVIRONMENTAL IMPACT OF ETHNIC CONFLICT AND TERRORISM IN SOUTH-ASIA**, submitted by **Mr.UTTAM KUMAR SINHA** in partial fulfillment of the requirements for the award of the degree of **MASTER OF PHILOSOPHY** of this University, is his original work. This dissertation has not been submitted for the award of any other degree of this University or of any other University to the best of our knowledge.

We recommend that this dissertation be placed before the examiners for evaluation.

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Uttam
Uttam Kumar Si 21/7

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to my grand mother

PRODUCTION: THE PROBLEM DEFINED

There's even a through-bred horse called Ecological Friendly

The purpose of this study is to explore the connection between conflict-induced environmental problems and their fall-out, both, at national and international levels. In other words, the study would focus on the magnitude and spatial distributions of conflict-related environmental degradation.

Paul Harrison talks about the three major crises, which brought about revolutions,¹ the first two - agricultural and industrial have already been witnessed. The Third crisis which he addresses is related to the fragile nature of the eco-system,² depletion of forests and degradation of farming and grazing lands as the environmental distress of the present. A revolution in totality may not have come about but serious concerns and oriented studies are being extensively done on the related aspects of the environment.

Environmental concerns have, no doubt, increased significantly throughout the world in recent years. The Brundtland Commission report on, 'Our Common Future', was a

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1. Paul Harrison, The Third Revolution: Environment Population and a Sustainable World (London: Tauris, 1992), pp.16-8.
 2. An eco-system is a set of interacting, interdependent, living and non-living components or sub-systems. It conveys the idea of a group of organisms and the place or habitat they occupy and the way the two are linked together to form a working unit.

comprehensive and farsighted study on the predicaments of the planet in relation to the frail environment and how to preserve it. In 1987, a report by the World Commission on Environment and Development (WCED) was published which was followed by 'signs of hope', in 1990 (an essential update on the progress since the WCED report). Of late, the 1992 'Earth Summit' in Rio under the United Nations conference on Environment and Development (UNCED), highlighted a conglomerated concern for the seemingly unendless plethora of environmental worries. People are becoming more and more environmentally conscious. This 'Greening of the Consciousness',³ as Henryk Skolimowski says, is reflected on both, national and international political agendas. Environmental issues, hence, becomes an increasingly essential part of future studies, more so, if the preferred and probable future sustainable development⁴ through a

3. Henryk Skolimowski, Eco-Philosophy (Boston: Marion Boyars, 1981), pp. 75-82.

4. This is a new jargon phrase in the development business. It stems from a concern that many activities undertaken on the name of development have actually squandered the resources upon which development is based. This phrase usually talks of improving people's material well-being through utilizing the earth's resources at a rate that can be sustained indefinitely or at least over several decades, living off nature's interest rather than depleting the capital. Further, reference to this can be found in Czech Conroy and Litvinoff Miles, eds., Sustainable Livelihood in Practice (London: Earthscan Publications Ltd., 1988) and also the World Commission on Environment and Development: Our common future (Brundtland Report) (New York: Oxford University Press, 1987).

sustainable society⁵ has to come about.

With continual increase in population and an exponential increase in human activities, the Environment is now affected in myriads of different and often interconnected pathways, both, direct and indirect. While many of the numerous environmental effects and impacts of human activities are direct, immediate and visible, there are equally many other effects and impacts that are indirect, take a long time to develop and may not be visible or detectable immediately after any specific action.

The topic ' Environmental Effect of the Ethnic Conflict and Insurgency in South-Asia', stems from the above highlighted precarious position of the environment and the ecosystem which the world finds itself in, through the economic, social and political structures of human-societies. This dissertation does not isolate the above aspects but, where possible, tries to show its inherent interconnected nature with ethnic conflict and insurgency and brings about fall-out effects which it can have on the environment of the region.

5. Sustainable society refers to the people's capacity to innovate and adapt to the resources in order to help themselves in the future. It enables the society to gain a secure and decent living standard for themselves and their children, when they are and with the resources they command.

Before progressing on, it would be of considerable importance to reflect, delve and dissect on the topic immediately. As couple of queries comes to reckoning which, on a certain level of explanation, would try to bring about the pertinent differences between the question like why 'environment' and why not 'ecology'; the nature of the word 'effect' in relation to 'impact' and the complexities of conflict in relation to ethnicity and insurgency which also incorporates counter insurgency.

The Problem

Environment(al) in the topic is used instead of ecology for reasons of being general and being no more scientific. Ecology seems to be too daunting a word, too scientific, too specialised to convey the scope which the study tries to explain. Ecology, derived from a Greek word, 'oikos', meaning house, is a branch of science that deals with inter-relationship of organisms 'in' and 'to' the environment.⁶ Thus, the science of ecology attempts to study the nature of environments and their effects on the organisms who live with them. Environment has been defined as the sum total of all conditions and influence that affect the development and life of organisms. Thus, environment, which forms the core subject matter for the discipline of ecology, includes all

6. Encyclopedia of Environmental-Science, the (New Delhi: McGraw-Hill, 1975), pp.610-620.

conditions and influences with which each organism lives. To bring it down from the level of technicality to a more understandable, pedantic plane, environment can be summed up as the aggregate of all the external conditions and influences affecting the life and development of an organism. The aim of the environmental related issues is to distinguish between factors arising from outside the system and factors inherent in the system itself.⁷ The former aspect is related to the topic.

The word 'effect', is used as a term and though frequently used synonymously with 'impact', has nonetheless a certain differentiating meaning in the context of the topic defined. 'Effect', as of understanding from Peter Wathern's edited book, 'Environmental Impact Assessment',⁸ means a certain induced changes in the bio-geophysical environment. 'Impact' is the consequences of these changes. The 'induced-changes', in the dissertation, would refer to the aspect of conflict and its direct bearing on the environment. 'Impact' would come as a logical follow-up of effect but would not be used independently for the dissertation makes no assumptions about natural changes which, going by what Peter Wathern says, is the crucial component of impact.

7. David Sills, ed., International Encyclopedia of Social-Sciences, (USA, 1968), pp.91-93.

8. Peter Wathern, ed., Environmental Impact Assessment.

Ethnic problem, and counter-insurgency refers to the conflictual nature prevalent in the society. Conflicts are a common phenomena and when occurring in the third world developing countries, tend to gather additional intricacies and acquire persisting character. Sources of conflict, on reflection, in a particular region, can be grouped under four separate categories: national, regional, inter-regional and global confrontation. The fourth category mentioned above came essentially from rivalry which, after the end of the cold-war, has taken, for all practical reason a dead existence. Therefore, the above aspect of conflict would be for all reasonable explanations dealt within the parameters of the inter-state and intra-state setting of the region. Conflicts arise within a nation due to not only indigenous conditions but also through external tones. All countries in South-Asia have these minorities that overlap national boundaries. These minorities pose immense problems that threaten the state-structures and result in the hostile confrontation with neighbours. The present dangerous situation owing to the fragile environment, have out-moded the earlier concept of exertion of "force" for the purpose of compelling "our enemy to do our will". The environmental destructiveness of weapons will leave little to conquer in a defeated land. A new genre of low-level war fighting is being resorted to this and is increasingly taking the form

of insurgency, terrorism and counter-insurgency, not only within a state but also in regional conflicts.

Ethnic conflict, essentially, in this dissertation, would be put to perspective on the conflict over natural resources and the gamut of its problem would be put forward. Lewis Coser notes that, "Ethnic conflict is a struggle over values or claims to status, power, scarce-resources, space, in which the aim of the group involved is to gain the objectives and simultaneously, to neutralize, injure or eliminate rivals"⁹. Peter Wallensteen is more specific oriented and puts it "as a social-situation in which a minimum of two parties strive at the same moment in time to acquire the same set of scarce resources".¹⁰ Natural resources, for a complete understanding, can be defined as, "the wealth supplied by nature and available for human use, including energy, mineral deposits, soil fertility, timber, water power, fish, wildlife and natural scenery etc. The effect of the conflict would be included from its action on those resources that are renewable (Flow); those that are available (continuous)".¹¹ Taking

9. Lewis Coser, Continuities in the Study of Social Conflict (New York: Free Press, 1976), pp.75-77.

10. Peter Wallensteen, "Environmental Destruction and Serious Social Conflict: Developing a Research Design" in PRIO Report, 3 May, 1992, pp.47-54.

11. David Sills, n.7, Vol.11, pp.85-87.

natural-resources as a factor, the conflict would suggest a special situation of competition on which both actors or more than two actors are aware of the incompatibility of potential future positions and in which each is strongly impelled to occupy a position incompatible with the perceived interests of the other(s).

All human relations can be viewed as intermingled by two closely related actions. One is in the conflictual mode and the other in integrative. When two or more individuals or groups come into contact they either choose to make their relationship primarily conflictual or primarily integrative, i.e., cooperative¹². If the initial relationship is primarily conflictual, there will, nevertheless, emerge at least, a few minimal strands of understanding and reciprocity like rules of combat and an agreement to disagree. If, on other hand, the initial relationship is primarily integrative, it is certain that conflict will develop. Incompatibility would lead to conflict only when the desire is put into action to achieve ends by at least one of the actors (parties). The competitive situation can become conflictual only upon 'how' the incompatible is perceived and also upon 'whether' the issues involved are considered important to the parties. Once this competitive

12. Ibid., Vol.3, p.226.

process takes shape and antagonists are poised, often reinforced by their alliance structure, it then takes an act of provocation to set-off a violent conflict.

A certain evolutionary process can be discerned in the conflict induced environmental degradation. First comes the groups competing against each other for existing resources and then comes the form insurgency, particularly, from that group which has been marginalised in its battle over the resources or which has been pushed away from an area into another, which could also be trans-crossing the border. Counter insurgency is the obvious response from the machinery of the state in order to check the secessionist movements. This evolving pattern has a remarkable and potentially dangerous effect on the environment of the region.

Today, as it can be seen, international security concerns secessionist movements involving armed insurgencies and proxy wars across national boundaries. Insurgency can be described as a compositively progressive extra-constitutional and a variegated struggle against the established political authority. Counter-insurgency, conversely, can be, on the immediate, put forward as the authorities response to checking and curbing the insurgents. This nature of conflict through the modes and operations

that they employ in their respective strategies and tactics can have a detrimental effect on the general eco-system of the area.

South-Asia, as a region becomes a very interesting area of study owing, first, to the high environmental stress caused by a variety of environmental problems, such as huge population; soil erosion and siltation; deforestation and land degradation; floods droughts & sea level rise. Secondly, the highly volatile conflictual structures of the region owing to its ethnic problem and separatist tendencies add a worrying dimension to the environmental problems which creates enormous threat to the security and stability of the region.

South-Asia is an ethnic powder-keg, with ethnic overlappings, giving rise to a majority - minority complex in almost every country. Several topologies of international conflict, continuing issues of conflicts, status of conflicting parties and systematic characteristics have been written about over the years. Butterworth, for example, proposed the following typology of regional conflicts: Inter-State Cold War, Internal Cold War, General Inter-State, Colonial and General Internal.¹³ Bloomfield and Leiss

13. S.D. Muni, "Dimensions of Regional Conflict in South-Asia" in D.K. Arya Sharma and Sharma R.C. eds., Management Issues and Operational Planning for India's Borders (New Delhi: Scholars Publishing Forum, 1991), pp.75-79.

suggested, more or less similar classification: Conventional Inter-State, Unconventional Inter-State, Internal with External Input, Primarily Internal and Colonial¹⁴. Morris and Millan suggest a primarily issue dependent classification: Ideological related to differences over domestic political system, an important aspect of regional politics described as regime compatibility, Territorial, Hegemonic and power related, Ethnic, Refugee and Migration related¹⁵. Picking up from the above given topologies of conflict and placing it in the context of South-Asia as region, four types can be identified: Territorial, Ideological, Ethnic and Security-related. The ethnic problem seems to be very prominent, so much so, that it can generally defy the rigid conflict criteria as suggested above. The present catalogue of ethnic tensions in South-Asia is seizable and severely dangerous indeed. The catalogue includes insurgencies in the North-East of India, Gorkhaland problem centering on ethnic Nepalese, Sind and Baluch problems in Pakistan, Chakma tribal insurgency in Bangladesh, ethnic Indians in Terai areas of Nepal and

14. Lincoln P. Bloomfield and Leiss, Amedlia, C. Controlling Small Wars: A Strategy for The 70's (London: The Penguin Press, 1970), pp.52-59.

15. S.D. Muni, n.13, pp.75-79.

Tamils in Srilanka. This ethnic trouble shows disintegrative tendencies when it takes the form of domestic armed insurgencies and Terrorist strategies. In Pakistan, Sindhi nationalists demand for an independent Sindhudesh is visible and violent and the tension between the Sindhis and Mojahirs (Muslim settlers from India after the partition of British India) is evident. Armed separatist movements that accompanied demands for an independent Baluchistan and Pashtunistan among the Baluchi and Pashtun (or Pathan) population of the West- N.W.- regions of Pakistan, though may have been shelved or muted but the sparks are there. Insurgency among the Chakma tribes of Chittagong Hill Tract may have abated but the tribal insurgency in the country is indicative of the fact that even a relatively homogenous state faces ethnic nationalism and the potential loss of some territories. The dissertation would explore the question of how much is it a conflict over resources and what are the effects of state response in tackling the separatist - insurgency wave in relation to the environment of the region, which would mean bringing in the aspect of low-intensity warfare and its environmental damages.

Having defined the topic, the dissertation would progress by explaining at length the chief components of the topic in the next two successive chapters. This would be followed up by the description of the general precarious

environment of the region, that is south-Asia. The combination of the first two chapters on the third would result in the fourth, which will be the 'effect aspect'. The dissertation would be, naturally, summed up with a conclusion.

The First chapter would deal with the conceptual framework of environmental conflicts and be entitled 'conflict Induced Environmental Degradation.' The connection between conflict and environmental destruction would be studied and various dimension explored. It would be, primarily, on a theoretical basis bringing forth aspects of conflict over natural resources, ethnic trouble and its relation to the environment and fall-out effects in the form of refugees or migration of people.

The Second chapter will incorporate the aspect of war on the fragile environment. A study encompassing the history will be dealt on a general level of understanding. A particular focus of study will be on the low-intensity warfare as produced by Guerrilla Warfare by the insurgent and the states' counter-measures.

The Third chapter will be entitled, 'The Focus on South-Asia: Environmental concerns.' It would lay bare the problematic and dangerous scenario of the region through

various indicators, of which, the population and the demographic structure, deforestation and land degradation would be the chief.

The Fourth chapter would illustrate the interaction of conflicts of low-intensity warfare on the environment of South-Asia and be effectively and emphatically entitled, 'Focus on South Asia: Political conflicts, Environmental degradation and the origin of New conflicts.'

**CONFLICT INDUCED ENVIRONMENTAL
DEGRADATION: TOWARDS A FRAMEWORK**

Throughout history conflicts have arisen over resources and nations have waged battles over it. This has been essentially motivated by the desire for land and natural resources. It has been suggested that during World War II, Italy, Germany and Japan were driven to extreme extent in their acquisition for resources and that in the Vietnam conflict the United-States was motivated by the desire to protect its access to rubber, rice and tin.¹ The other dimension of conflicts centering around natural-resources is the social conflicts like ethnicity and the majority-minority social set up.

In the contemporary world much of the social conflict stems from the competition over vital resources. It is the competition which brings the currents of conflicts into play. Dahlberg asserts that "Conflict over natural resources continues to be a real possibility today and the whole concept of national security has broadened to include these resources".² Priages notes that resource conflict appears to be more plentiful as demand increases in the face

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1. A.M. Mannion, Global Environmental change. A Natural and Cultural Environment History (London: Longman, 191), p. 25.
 2. Philip A. Neher, Natural Resources: Economics, Conservation and Exploitation (Cambridge: Cambridge Univ. Press, 1990), p. 17.

of environmental constraints and disruptions and as the manipulation of scarce resources becomes a more crucial dimension of international conflict and domestic ethnic conflict.³

Conflict induced environmental degradation relates to the tendency of clashes of interest in order to highlight the most critical environmental tensions in the international arena. These clashes of interest are most of the time related to the intrinsic importance of territory which is governed by its natural resource like minerals, energy sources, water and land itself. Desmond Morris and Peter Marsh explain Territoriality as a deeply ingrained aspect of human life specially if the ecology is such that there is a need to defend access to scarce resources.⁴ Kratochurl, Rohrllich and Mahajan identify three different types of disputes over territory.⁵ A 'positional dispute', which derives from the uncertainty over the exact location of boundary lines. A 'functional boundary dispute', which involves disagreement over the utilization of a

3. Ibid. pp. 75-77.

4. Robert Mandel, Conflict over the World Resources (Connecticut: Greenwood Press, 1988) p. 53.

5. Bruce Byers, "Ecoregions State Sovereignty and Conflict", Bulletin of Pece Proposals, Vol. 22, No. 1, 1991. pp. 65-67.

transboundary resource. They also define a third kind i.e. 'territorial disputes evolving from the social-systems', which relates to the competition and rivalry of one community with similar ethnic and cultural background against another. Mandel further explains that an ethnic conflict rather than just a desire for more resources has a greater livelihood of producing a border dispute.⁶

Competition and rivalry becomes more intense if the resources are scarce. Scarcity is an extremely complex and multifaceted concept and many writers deal only with some of its facets or attempt to define it through rises in the cost of extracting resources or the price of buying them. But for the precise purpose of this dissertation, scarcity of a given resource for a given nation at a given point in time will be defined as the ratio of the human demand for the resource to the environment's ability to supply it. The demand can be taken as a function of the size of the human population and the resource use per person. The supply can be taken as a function of the physical depletion of resource from the earth.⁷ The two (demand & supply) are highly interactive and the effect is potentially present, exemplified by greater resource depletion frequently

6. Mandel, n. 4, p. 57

7. Michael Chisholm and Smith, David M., eds., Shared Space Divide Space Essay on Conflict and Territorial Organisation (London: Unwin Hyman, 1991), pp. 181-190.

connecting with population pressure on resource access and a greater disregard for environmental carrying capacities. To put it briefly scarcity would imply the ecological/physical combination of a relatively depleted resource with a relatively large human population comprising of numerous ethnic groups with various cultural backgrounds and religious attachment.⁸

Social Conflicts & Environmental Degradation

The connection between social conflict and environmental degradation can be put forward in three different dimension. First, where there is a social conflict, environmental destruction takes place as a result of it. Second, environmental destruction may itself bring about social conflict and finally beside being the cause or the consequence of social conflict, environmental destruction may in some cases add fuel to the flames of social conflict. Researchers and scholars like Homer-Dixon, Peter Wallensteen and Stephan Libiszewski⁹ have through their

8. Bjorn Heltne, "Conflicts Concerning the Control of Scarce Natural - Resources", Contemporary South Asia, Vol. 2, No. 2, 1993. pp. 123-149.

9. Thomas F. Homer - Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", International Security, Vol. 16, no. 2, Fall, 1991. pp. 76-116. Also see: Peter Wallensteen, "Environmental Destruction and Serious Social Conflict: Developing A Research Design", PRIO Report, No. 3, May, 1992, pp. 47-54, and Stephan Libiszewski, "What is an Environmental Conflict?" Environment and Conflict Project, ENCOP, Occasional Paper, No. 1, 1992. pp. 75-82.

effort brought out a conceptual framework of conflict and environment, throwing light on both 'conflict related environmental degradation' and 'environmentally induced social conflicts'.

According to Anthony Oberschall, social conflict is one of the most ubiquitous of events and encompasses a broad range of phenomena, including class, racial, religious and community conflicts plus riots, rebellions, revolutions, strikes, marches, demonstrations and protest rallies¹⁰. Conflict has a wide range of connotation and is a pervasive social process occurring at all levels of social life but to precisely put it on relationship with environmental destruction, Peter Wallensteen's definition becomes very appropriate. He puts forward a situation in which two or more parties strive and compete at the same moment to get hold of the same set of scarce resources. Here, scarcity can be defined as insufficiency of material as well as ideological resources to meet a demand or requirement. Its bizarre character in a conflict is that it has the potential of spawning organised actors and at the same time devising an issue of contention or incompatibility among existing organised actors. As Wallensteen further argues, scarcity

10. Anthony Oberschall, "Theories of Social Conflict", Annual Review of Sociology, Vol. 4, 1978. pp. 291-315.

is the necessary condition to originate the conflict, its materialisation need three essential requirements: organised actors, a minimum of one incompatibility in their objectives and their conscious behaviour to achieve the goals.

In a given environmental territory which encompasses natural-resources, the conflicting behaviour of social conflict (of which ethnic problem will be highlighted) will lead to degradation of the environment and the eco-system of the region. This acts as a catalyst for migration of people both internal and external (refugee problem) and takes the nature of both **Intra-State and Inter-State tension**.

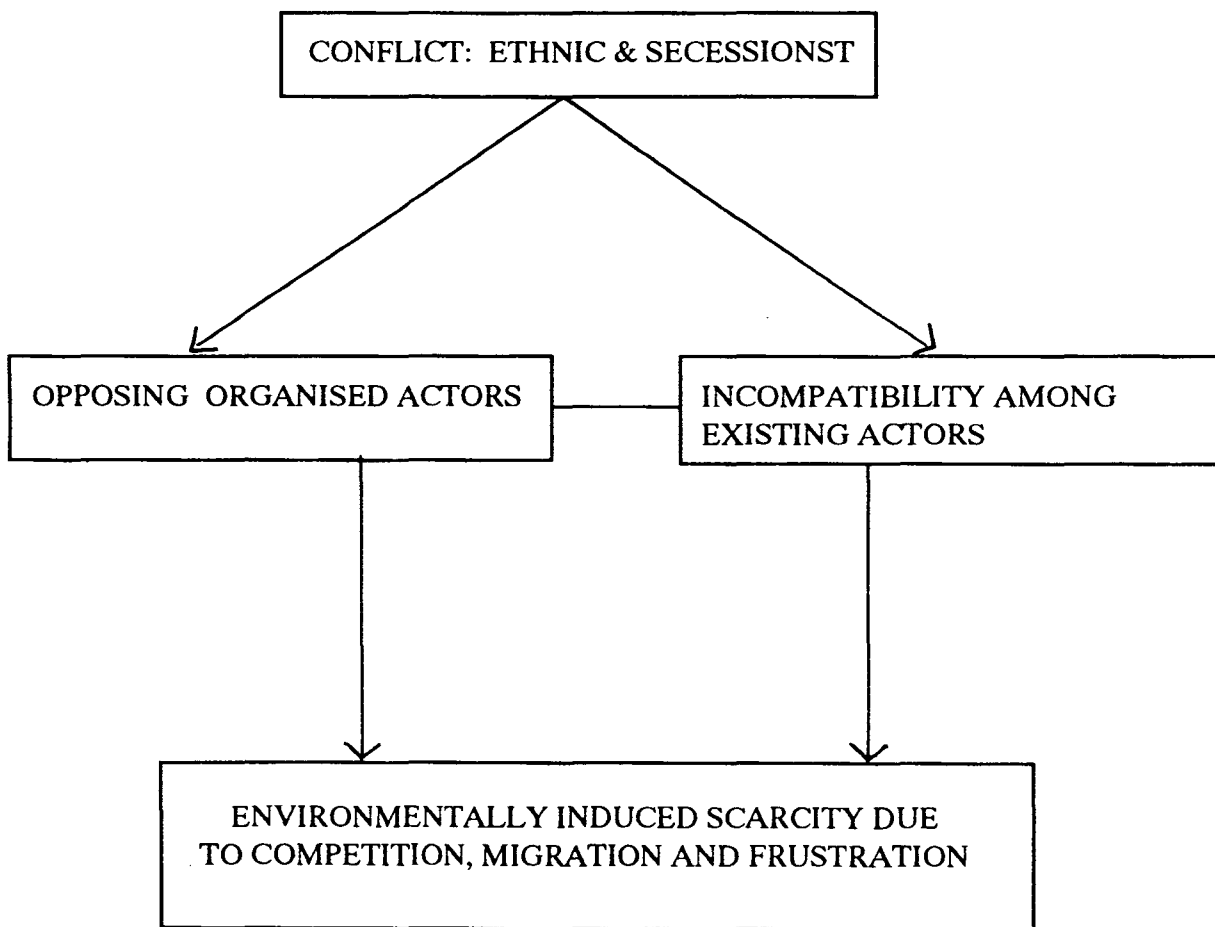
FIGURE 1: Source: Ashok Swain, Environment and Conflict: Analysing the Developing World, (Uppsala: Uppsala Univ. Department 1993), Report No.37, p.21.

FIGURE 2: Source: Ashok Swain, Environment and Conflict: Analysing the Developing World, (Uppsala: Uppsala Univ. Department 1993), Report No.37, p.21.

Ethnic Conflict and it's Relation to Environmental Destruction

The most conspicuous phenomenon in current world politics is an increase in the number and intensity of ethnic conflicts. Some examples are the new Indian movement in Latin America, resurgent 'tribalism' in Africa, intensified sectarianism and ethnoconfessionalism in the Middle-East, Separatist movements on South-Asia, racial clashes in south-East Asia and a nationalist wave in former Eastern Europe, where at least one country - Yugoslavia -

FIGURE: 1 CONFLICT INDUCED ENVIRONMENTAL DEGRADATION



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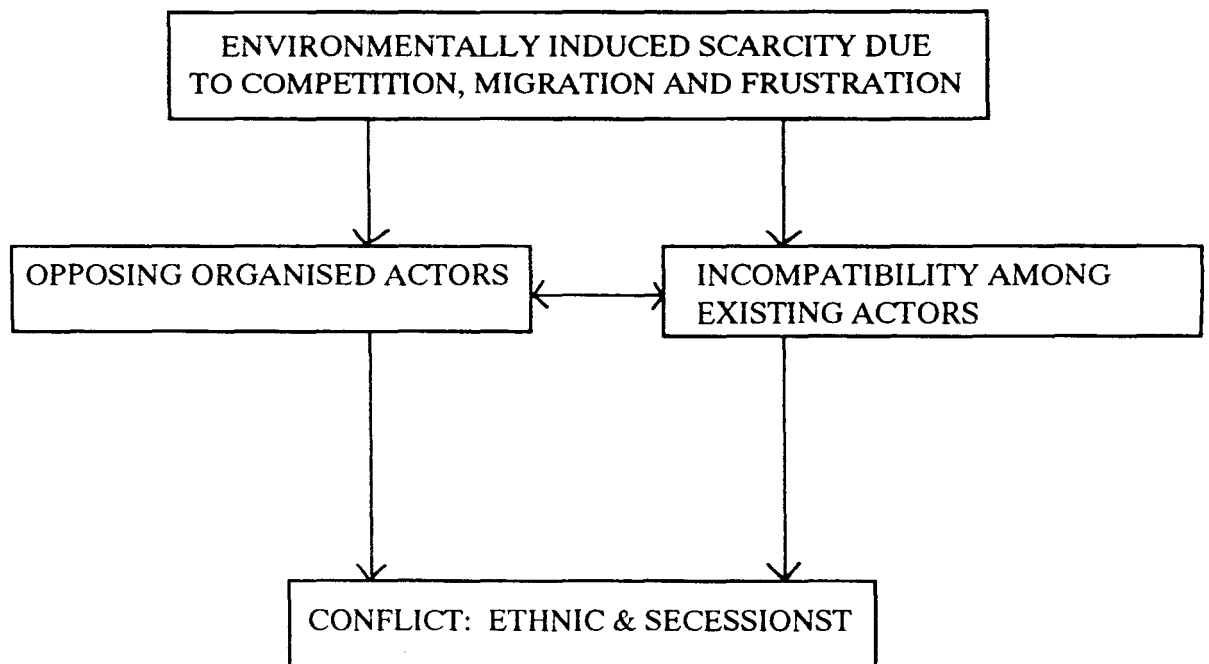


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FIGURE: 2 ENVIRONMENTAL DEGRADATION INDUCED CONFLICT



finds itself in civil war. In the former soviet Union The 'national question' has returned to become the major political controversy.¹¹

Ethnic conflict by its very nature not only hampers economic development but also through its inherent nature of competition towards natural resources leaves a telling effect on the environment. Much of South-Asian countries and Sub-Saharan nations like Ethiopia and Somalia are severe cases.

Meaning of Ethnicity

Ethnicity is necessarily on elusive concept, as the type of identity usually referred to as 'ethnic' can be manipulated for political purposes and thereby be transformed. Ethnicity has a primordial or ascribed quality, but it is also true that ethnic identity is shaped by historical experiences.¹² It is thus at the same time objective, subjective, and a creation. Stavenhagen¹³, stressed the objective as well as subjective factors as

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11. Peter Wallensteen, ed., Peace Research: Achievement and Challenges (Boulder and London: Westview Press, 1988), p. 120.
 12. Richard H. Ullman, "Redefining security" International security, Vol. 8, No. 1, Summer, 1983. pp. 139-40.
 13. Astri Suhrke and Noble, Lela Garner, eds., Ethnic Conflict IN International Relations (New York: Praeger Press, 1977), p. 2.

necessary elements for the existence of an ethnic group. The objective factors can be listed as: language, religion, territory, social organization, culture, race, common origin. The subjective factor is any particular combination of the objective factors chosen by a group to assert its identity and then used as a common resource to achieve a certain goal.

Ethnic tension can stem from the following typology of conflict-generating processes:

- a) Conflict stemming from the universes of long-term trends such as modernization, demographic change, urbanisation, etc.

The most basic type of conflict has to do with the inherent unevenness of development on the national as well as the world level, which means that certain regions are placed in more advantageous positions than others and consequently attract more investment and skills. Such centres usually become the bases for nation building; whereas people in the backwash or marginalized regions are the reluctant citizens. Their protests are often expressed in ethnic terms, because this, typically, is the only mode of social organization known to them.

- b) Conflicts stemming from the scarce natural resources

Scarcity of natural resources creates conflict when resources shared by several groups are diminished, or when

these resources are claimed by an external power. Conflicts which concern the external control of natural resources can be exemplified by the way forest wealth is used by jungle tribes on the one hand and urban middle class populations on the other. For the former a forest represents a way of life, for the latter a forest may represent simply a valuable resources. Urban groups might not even be aware that a forest inhabited by human-beings, and, if they were, they might not consider these beings as human. The conflicts resulting from such clashes of interests are fundamental. They represent two different paradigms of development: growth and modernisation versus ethno-development or in spatial terms, functional versus territorial development.¹⁴

Increased resource scarcity and competition for scarce resources seems inherent in modern development. This competition sometimes leads to ethnic conflict resulting in ethnocide or exodus of marginalised groups: jungle tribes, nomads, etc.

Conflicts associated with infrastructural and industrial projects affecting local ecological systems

The problems of dislocation and internally displaced people is a resultant of infrastructural and industrial

14. Mandel, n. 4, p. 75-82.

projects affecting local ecosystems. This implies the harnessing of resources for functional development but leads to under development and environmental deterioration in the region directly concerned. Parts of it may become uninhabitable. It's population will have to adapt to a reduced quality of life and may even be forced to abandon the traditional habitat. In Ethiopia and Sudan irrigation schemes displaced pastoralists and forced them into less favourable and more crowded terrain.¹⁵ This led to the further deterioration of the already fragile ecosystem. The marginalisation of the pastoralism bred dissidence and ethnic rebellions. All over the world millions of tribes have become ecological refugees: or to put it more frankly - 'development refugees'. Ecocide has often ethnocidal consequences.¹⁶

From the above consequences it can be stated that the causes of ethnic conflict reside in objective disparities between groups that is further aggravated through policies aimed at those disparities.

After establishing the consequence of ethnic conflict from the competition and rivalry over scarce resources, the

15. Desmond Morris and Marsh Peter, Tribes (London: Octopus Publishing, 1988), pp. 27-31.

16. Ibid. p. 31.

next step becomes imperative for the study to establish Ethnic conflict and its linkage to Environmental destruction. This will be put forward on two base analysis: **Group vs Group** and **State vs. Group**.

a) Group vs Group

Conflicts are linked to parties in society with conflicting ideas or incompatibilities. The competition over the use of a scarce renewable resource can be seen as incompatibility among the groups in a society. The perceived exploitation or overuse of common natural resources by one party might help to organise new parties or to persuade the already existing parties to take up this issue in an intention to protect their interests. The formation of a new party might take place expeditiously in a response to some acts of the perceived exploiter or it might come as a gradual rejoinder of the persisting resentment.

The battle for protecting their own share of water, land, forest, and other renewable resources or acquiring those of others can potentially create conflicting groups in a society. The activation of groups may take place in accordance with the already existing religion, caste, class, linguistic, regional or other lines or the scarce resource may itself bring the "we-them" dichotomy into the society. If one party, rightly or wrongly perceives the state as a

collaborator with the other, then this group conflict might transform into a 'state vs group' conflict and subsequently turn into a secessionist movement.¹⁷

Sharing of water has all the potentiality of two groups contesting over it for its utility. In 1960, two provinces of the U.S.A., Arizona and California had contested each other over the use of the Colorado river water. The judicial verdict satisfied both the contesting parties.¹⁸ But it's not always that verdicts can please the parties, and in such a case the group which finds itself being marginalised resorts to disruptive means so as to impede the other group from acquiring the benefit of the resource. The Cauvery water dispute between Karnataka and Tamil Nadu has led to political agitation and riots, causing several deaths and displacing thousands of people.

In Ethiopia, the loss of land due to soil degradation brought pastoralists and agriculturists into conflict in the 1980s.¹⁹ These group clashes further put stress on the

17. Reidulf K. Molvaer, "Environmentally Induced Conflicts?" Bulletin of Peace Proposals, Vol.22, No. 3, 1991, p. 178.

18. Ashok Swain, Environment and Conflict : Analysing the Developing World (Uppsala: Uppsala University Department 1993) Report No. 37, p. 28.

19. D. Johnson and Anderson, D., eds., The Ecology of Survival: Case studies from North east African History (London: 1988), p. 172.

already existing fragile ecosystem of the region, as they resorted to means of ravaging the resources in order to hurt the others existence. The whole Sahel region, particularly Sudan, is an area of similar environmental wreck owing to prolonged conflict.

b) State vs Group

The Scarcity of renewable resources also has the potential to breed a conflict between the state and the internal actors. The resource uses of the State agency in a particular area or region might be perceived by the local population as exploitation of the interests of the others.

If the affected people belong to an ethnic minority group, then the perceived exploitation by the majority ruled state, might further stretch the already existing social dichotomies and contribute to the activation of conflictual actors. Likewise, if the environmental destruction is being perceived as premeditated imposition on a particular region or people, it might lead to the formation of a new actor in conflict with the state. The historical importance of the exploited resources might elevate the probability of the ensuing conflict. In the absence of an early resolution, these conflicts might lead to struggles for autonomy or secession. Weak state structure due to strong ethnic identities and lack of resources make the developing countries more vulnerable to experience this phenomenon.

From 1988, a bitter struggle has been taking place between the forces of the state of Papua New Guinea and the secessionist forces of Bougainville island. According to Volker Boge, one of the main causes of the struggle is "severe environmental degradation, which has endangered the very conditions of survival of the island's indigenous population"²⁰ The lives of the inhabitants of Bougainville island of the state of the inhabitants of Bougainville island of the state of Papua New Guinea changed dramatically after the digging of one of the world's biggest copper mines in the Panaguna hills in 1972. The environmental damages caused by the operation of the mine reduced the availability of agricultural and as well as yield of the crops. Deforestation and river pollution badly affected fishing and hunting in the island. While the environmental degradation caused by mining operations led to a number of economic difficulties for the local population, the state ignored the demand for its closure because it was the major pillar for economic growth in the country. The growing discontent among the Bougainvilleans led to a sabotage campaign against the mine in the autumn of 1988 and subsequently, war against the troops of the National Government for secession.

20. Volker Boge, "Bougainville: A "classical" Environmental conflict?" ENCOP, Occasional Papers, No. 3, October, 1992, pp. 25-32.

The dispute over the sharing of river water has had a dynamic contribution to the on-going separatist movement in the Indian province of Punjab. This Sikh dominated province has been traditionally provided with abundant water from the Beas, Sutlej and Ravi rivers. But the demands in the downstream provinces, Rajasthan and Haryana led to the decision by the Central Government to construct canals and divert 60% of Punjab's water and energy to those Hindu dominated states. This became one of the major reasons for the Sikh Party (Akali Dal) to ask for autonomy in the 1970s and has led to a subsequent violent secessionist movement.²¹

Large-Scale deforestation in the Northern Indian Himalayan forest led to the procreation of the famous 'Chipko movement'. The people of that rural areas view the state as an illegitimate intruder in their forest and they resent the State for the continuing violations of their rights while diverting forest products to urban markets and industry. In an innovative form of protest, the villagers, mainly women, threaten to hug the trees if the saws came near them. The reaction of the Indian State to this movement up to now has been relatively peaceful. The situation is somewhat different in the Amazonian forest. In Brazil, some members of environmental groups and Amazonian

21. Times of India (New Delhi, June 26, 1991).

peoples groups who resisted massive destruction of the rainforests have been murdered. The superior Military College Brazil in a policy document entitled 'The structure of National Power for the Year 2001', enunciated the environmental activists as a threat to the development of the Amazon against whom the 'extreme resources of war' might rightfully be waged.²²

Environmental Destruction and Population Migration: Both External and Internal

Ethnic diversity does not automatically produce conflict and ethnic conflict does not automatically produce violence. Ethnic violence, however, very often produces refugees, especially when it is related to environmental destruction. The reduced production in the agricultural and industrial sectors of environmentally affected regions invariably force local small and marginal farmers and labourers to flee their homeland in search of other areas of survival. More the competition over resources in a particular eco-region, more would be the scale of migration. The migration can be internal or 'internally displaced people' or to be more precise 'environmentally displaced people' and can also transgress interstate boundaries which can culminate in a massive number of 'environmental refugees'

22. Ted Robert Gurr, Why Men Rebel (New Jersey: Princeton University Press, 1970), p. 24.

In subsistence economies, violent conflict disrupts food production and distribution and the often precarious conditions of daily life; famine and disease are often greater threats. A number of the ethnic conflicts that have erupted into violence and generated refugees in the developing world can be characterized as resource wars, in which battle lines reflect ethnic or tribal affiliations²³ Some begin as disputes over grazing, water or agricultural rights.

Like ethnic conflict, the migration of people too will be put forward on two base analysis: group vs group and state vs group.

a) Group vs Group

Wherever environmental refugees settle, they flood the labour market, add to local demand for food and other basic necessities of life which put new burdens on the society. The assimilation of the refugees to the new society is difficult in any case and when it takes place in another developing society, the situation gets even worse. The resulting scarcity of the new situation helps in away to generate strong feeling of 'nativism' among original inhabitants of the area. As nativism is defined, it is a claim by a group of people that by "virtue of its

23. Mandel, n. 4, p. 112.

indigenous character, rooted in historical claims, has right upon land, employment, political power and cultural hegemony that are greater than those people who are not indigenous"²⁴ Nativists will organise themselves as a group to protect their interest which might pave the way for a conflict between migrants and natives in the society.

Environmentally induced migration has the potential to transmit 'group vs group' conflicts from the areas of environmental destruction to far away places. This transmitted group conflict can spark riots and internal wars in the host society.

The environmental refugee phenomenon is not only a major contributor to the internal conflicts in the developing regions but is also a catalyst to the degradation of the environment of the region to which they move. The Haitian refugee question, which has been a major political debate on racial lines in the U.S. for some time, can be partly traced to the severe environmental degradation in that island country, which was known as the 'Pearl of the Antilles' in the recent past for its forest and fertile land resource.²⁵

24. E. El. Hinnawi, Environmental Refugees, (Nairobi: UNEP, 1985), p. 12.

25. Ibid. p. 33.

Table.1 Typology of Environmentally Induced Conflict.

Environmental Issues	Incompalibility	Party vs Party
1.1 Scarce Natural Resource	Disagreement on sharing	State State
1.2 Scarce Natural Resource	Disagreement on sharing	State Group
1.3 Scarce Natural Resource	Disagreement on sharing	Group Group
2.1 Loss of source of living	Migration to other state	State State
2.2 Loss of Source of living	Migration to urban areas	State Group
2.3 Loss of source of living	Migration to other areas	Group Group
3.1 Social Frustration	External interference	State State
3.2 Social Frustration	Institutional Decay	State Group
3.3 Social Frustration	Disagreement of power sharing	Group Group

Source: Environment and Conflict: Analysing The Development World. (Uppsala: Uppsala University Press, Dept., Peace and Conflict Research, Report No. 37, 1993) p. 41.

The poverty and starvation at home have driven a large number of Bangladesh Muslims to India. As a result of migration, Muslim now take up 40% of the 21 million people

in Assam.²⁶ This region has been experiencing a major conflict between native people of the region and the migrants.

b) State vs Group

The failure of the ecosystem which support the rural economy might actuate the villagers to eventually migrate to the nearby urban areas. It can also create a situation in which people move across borders. The world is already in the "middle of an urban revolution".²⁷ According to UNFPA's estimate, by the year 2000, 77% of Latin America's population, 41% of Africa's and 35% of Asia's population will be city dwellers. The urban growth rate is growing at a pace of 3.6%²⁸. The cities in developing countries are already surrounded by shanty suburbs, containing millions of inhabitants of which large number of them are without jobs and living in slums.

This migration towards the urban area creates various social problems and puts stress on the infrastructural facilities of the city.

26. Ramachandra Guha, "Logging The Gain", Indian Express (New Delhi, March 21, 1993).

27. The State of World Population (New York: UNFPA, 1993).

28. UNFPA, "Population and Environment", The state of World Population (New York: UNFPA, 1993).

The state environmental mismanagement can create an emergence of a popular uprising against the regime. The Philippines is a classic case of this relationship. The environments mismanagement in this densely populated country has brought severe burden to its natural base. The sacristy of the cultivable land in the lowlands has forced million of people to the urban slums or to the ecological sensitive upland areas.²⁹ The upland forests are the catchment areas to supply water for the country's irrigation and energy projects. The massive logging in those areas have destroyed the vegetative cover which in turn affects the structure of the soil causing the affected areas to be vulnerable to surface erosion.³⁹

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29. Yezid Sayigh, "Confronting the 1990s : Security in the Developing Countries", Adelphi Papers No. 251, Summer, 1990. p. 33.
 30. Norman Myers, "The Environmental Dimension to Security Issues", The Environmentalist, Vol.6, No.4, 1986, p.38.

TERRORISM, COUNTER-TERRORISM AND THE ENVIRONMENT: THE RECENT HISTORY

'I will show your fear in a handful of dust'
T.S.Eliot

Wars and the threat of war have been constant features during the 20th century. Wars result in loss of life and other casualties, in destruction of property and in social disruption. They additionally lead to environmental damage and ecological disruption, which is a matter of growing concern and the chief aspect of this dissertation. Damage to the human environment is of growing concern because of the awakening demands of an ever-increasingly over-populated world. The concern for nature has been reinforced, moreover, by the recent military demonstration of environmental devastation as an intentional strategy of war.

Human societies are essentially founded upon cooperation. But competition between group is also a human characteristic, intensified from time to time by environmental disruption and population growth. Immediate reasons for war are almost always stated on economic, political, ideological or even religious terms but the means through which war is conducted has a disturbing effect on the environment.¹

During the 1970s, environmental issues became more and more important is the internal policies of many states and

1. Arithur H. Westing, Military Impact on the Human Environment, SIPRI (London: Taylor and Francis Ltd., 1988), pp. 9-17.

in general in the international affairs. War in its various shades was increasingly viewed detrimental to the development because of its nature to squander scarce resources and destroy its pristine state. It also rocked the international confidence that was essential to the improvement of the environment at regional level. During this time two SIPRI studies dealt with the impact of warfare upon the environment, both approached the subject from the point of specific weapons or means of war. In the 'Ecological Consequences of the Second Indo-China war',² it analysed a particular war and dealt especially upon the impact of conventional high explosive munitions, of herbicidal chemical anti-plant agents, and of land-clearing tractors.³ The second, 'Weapons of Mass Destruction and the Environment',⁴ described the effects of nuclear weapons, of chemical and biological anti-personnel agents, and of a number of so-called geophysical weapons.

Wars are by their very nature violent, deadly and destructive. In an Inter-state war, the military forces of one or more nations attempt to force an enemy nation or

2. SIPRI Yearbook, 1978, "Ecological Consequences of the Second Indochina War" (Stockholm: Almqvist and Wiksell, 1976) pp. 46-50.

3. Ibid., pp. 24-25.

4. SIPRI Yearbook 1978, "Weapons of Mass Destruction and the Environment" (London: Taylor and Francis, 1977), pp. 17-16.

nations into submission by a variety of coercive acts; the recipient nation or nations attempt to reciprocate in kind. In an Intra-state war, a portion of a nation or other insurgent forces attempts to secede from or overthrow the established government, the latter in turn hoping to counter the revolt or insurgency. Again, both sides resort to violent and destructive acts. The intensity of the Inter-State war and Intra-State war can be different but the effect on the environment is equally devastating. As expressed in the introduction, this chapter will give a general outlay of the effects of war on the environment by citing specific examples but the idea would be to concentrate on the environmental effect of low-intensity warfare in the form of insurgency and counter-insurgency measures. This form will bring in the modes and operation of guerrilla warfare and the states response to counter it.

Nations are highly complex and diverse entities, but for precise purpose of the chapter it will be fit to begin by putting a nation as a composition of land and people. The people fall into a number of more or less distinct groups: The civil populace (either urban or rural), the armed forces, the government and very often, a quasi-military insurgent group. The land is divided into the so-called built-up environment⁵ - cities and land devoted to

5. Patrick O' Sullivan and Miller. Jesse W., The Geography of Warfare (Kent: Croom Helm Ltd. 1983), p. 25.

industry and transportation - agricultural land, and land that is more or less wild. The wildland consists of grassland, forestland and numerous lesser categories: desert, tundra, mountain, lake and so forth.

The destructive acts of war can be directed against any of these human and other components of a nation, either intentionally or incidentally. Armed forces have available a large array of destructive weapons and techniques to carry out such acts. In some instances they can exert additional pressure on an enemy by cutting it off from a necessary outside source of supply of food or fuel and other essential commodity.

Wars can be considered to be environmentally disruptive for any of a number of reasons. Essentially, to start with, war exerts a substantial effect on the civil populace. A fraction of the people can be killed or displaced, their sources of food denied for extended periods, or their homes or means of livelihood destroyed. It becomes environmentally disruptive when it exerts an effect on natural portions of the nation or region. This disruption is on the agricultural and wildlands which imbalances the eco-systems that the region supports.

War throughout its history has left an indelible mark on the environment as can be seen from the 'Table', in the

appendix to the chapter II. With the Earth's natural resources already insufficient to provide an adequate standard of living for all, warfare becomes an important aspect of study in its relation to the depredation of global environment. It is this anti-environmental aspect of warfare that will be examined in this chapter specially when warfare today is taking shape of counter-insurgencies and low-intensity modes in South-Asia.

Environmental Consequences of Wars

Warfare on the whole leaves an enormous damage on the environment. The damage done during fighting can be deliberate or incidental.⁶ The deliberate aspect presents a systematic and intentional features of warfare in order to deny cover to enemy troops, to destroy food crops and to terrorize the population. It also brings into play weather modification or various changes in environment as a method of warfare.⁷ Weather modification is a very complex physical, chemical and dynamical process, which under certain conditions, used as either tactical or strategical weapon can cause adverse reaction to the eco-system. Increasing rainfall or snowfall by methods of cloud seeding

6. A.H. Westing, Warfare and the Environment (Cambridge, Mass. : Harvard Univ. Press, 1977) pp. 75-92.

7. Ibid., pp. 101-102.

is a tactical mode of operation which interferes with the movement of troops, supplies and communications.⁸

The second half of the twentieth century has witnessed a very large number of wars or armed conflicts. But it was the wars in Indo-China (1965-73) that really brought to picture the frightening concern of the impact of modern warfare in relation to the environment. The use of herbicides and defoliants to destroy nearly one-half of the forest in South-Vietnam⁹ was the first time that a biosphere had been systematically assailed for military purposes (the effect of this war would be further illustrated as reference point)

Warfare in both civil and international dimension can be a direct, or an indirect cause of degradation. The debris of war may remain long after hostilities cease, making the general utilization of the eco-system difficult as well as dangerous. The consequences of warfare leaves a telling effect on the economic and social activities which in turn put's additional stress on the environment. People affected by warfare are unlikely to practice careful, productive agriculture, specially in cases where they have

8. SIPRI Yearbook, 1976, "Environmental and Ecological Warfare" (Stockholm: Almqvist and Wicksell, 1976), p. 49.

9. Ingrid Detter de Lupis, The Law of War (Cambridge: Cambridge University Press, 1987), pp. 50-52.

lost their essential means for living. Those forced to become refugees are unlikely to get satisfactory new land and usually suffer trauma and problems of adapting to new environments which hinder return to normal livelihoods.

Robinson has analyzed the types of ecological impact that various military activities impose on ecosystems.¹⁰ According to the writer the most fundamental and persistent effects arise when vegetation disruption is accompanied by massive soil erosion and by alterations to the hydrological regime and to the likely pattern of plant succession. All this makes the restoration of the original ecosystem very difficult.

Second Indo-China War: Effect on the Tropical Habitat

This war becomes an important case study because it was the first war in modern history in which environmental disruption became a substantial intentional component of the strategy of one of the belligerent powers.

In an attempt to subdue a largely guerrilla opponent, the USA pioneered a variety of hostile techniques causing widespread environmental disruption which were aimed at denying its enemy concealment, freedom of movement, and

10. Ibid., pp. 33-40.

local sources of food and other supplies. Of the various methods used, the three ecological most disruptive were:

- a) The massive and sustained used of high-explosive munitions.
- b) The profligate dissemination of chemical anti-plant agents.
- c) The large-scale employment of heavy land-clearing tractors.¹¹

During the period 1965-73 11 million bombs and 217 million artillery shells were used on 50% of the total land areas.¹² The destructiveness of this incessant bombardment left craters all over the country and rendered the utility of the land ineffective. Great damage was caused by chemical designed to 'defoliate' vegetation so as to deprive the enemy of cover or food crops. These defoliants were briefly tried in Malaya (by the UK) in the 1950s but were heavily used in this war. The main forms used were: 'Agent orange': 2,4-D+2,4,5-T and 'Agent White': 2,4-D+ picloram and occasionally 'Agent Blue' (based on picloram).¹³ Some

11. SIPRI Yearbook, 1978, n. 2, pp. 24-25.

12. SIPRI Yearbook, 1977, "Delayed Toxic Effects of Chemical Agents" (Stockholm: Almqvist and Wiksell, 1975), pp. 20-22.

13. J. Crossland and Shea, K.P., "Hazards of Impurities", Environment, Vol. 15, No. 6, 1970, pp. 16.

55 thousand tonnes of these defoliants were used. These were very deadly compounds containing a lot of toxic elements. 'Agent Blue', was used against cropland and contained cacodylic acid while is 54% arsenic.¹⁴ The arsenic tends to accumulate in the food chain, making agricultural use of the contaminated land risky. According to the UNEP (1980).¹⁵ The mixture of 2,4-D (dichlorophenoxyacetic acid) and 2,4,5-T (Trichlorophenoxyacetic acid) used in 'Agent orange', contained a contaminated dioxin (2,3,7,8 - tetrachlorodibenzo-p-dioxin or TCDD). This substance, the report suggested was highly foeto-toxic (toxic to the foetus) and teratogenic (capable of producing abnormal offspring). The land clearances through the employment of 'Rome Ploughs' - these monstrous 33 ton armed tractors, each equipped with a blade to shear and push over trees of almost any size. It was used to destroy forests and crops and to raze villages. A company of 30 could remove heavy jungle at a rate of 40 hectares per day and light jungle of 160 hectares per day.¹⁶ About 350,000 hectares of forest land in south vietnam were

14. Ibid., p. 19.

15. United Nations Environment Programme, "The World Environment 1972-1982" (Nairobi, 1980) pp. 152-155.

16. H.A. Rose and Rose, S.P.R., "Chemical Spraying as Reported by Refugees from South Vietnam", Science, vol. 1977, No. 4050.

cleared in addition to thousands of hectares of rubber plantations, fruit orchards and fields.

Although no portion of Indo-china was exempt from military punishment, it was the 17 million hectares of largely rural south-vietnam that bore the brunt of the attack and suffered the worst mutilation. South Vietnam was subjected to 71% of the total high-explosive munitions used and to virtually all of the herbicidal attacks and Rome-plough land clearings. US hostilities directed against the rest of Indo-China mounted largely from the air - were in large measures ancillary to those directed against South Vietnam. The remaining 29% of the munitions were distributed as follows: Laos, 16%; North vietnam, 8%; Cambodia, 5%.¹⁷

a) Forest Vegetation

About 5.9 million hectares or 58% of the woody vegetation of South Vietnam is of high commercial value. The dense forest type is the most extensive vegetational type of the woody vegetation, as well as being the most important from the standpoint of forestry. It is also the type that can provide a guerrilla force with the greatest degree of protection and maneuverability. The indigenous

17. SIPRI Yearbook, 1978, No. 2, p. 33.

forces controlled virtually all of these forests throughout the war. Thus, the U.S. offensive was largely directed towards destroying these forests and the armed forces sheltering in them. The damage to the forests of South-Vietnam caused by bombs and shells can be presented under two-heads: **i) complete obliteration and ii) severe damage.**¹⁸ The first category comprised the forest land that was converted to craters by high-explosive munitions. It was calculated from data that such crater-obliterated forest areas add up to about 104 thousand hectares. The second category comprised the forest land that was subjected to damage caused by flying metal fragments (shrapnel). An area of about 4.9 mill hectares were completely injured by shrapnel¹⁹, which in turn lead to fungal entry and to decay, this inevitably led to a significant proportion of tree mortality. The resultant effect was that South Vietnam lost about 50% of the timber value in two to three years after sustaining a puncture wound. The profusion of craters in the forests made logging a difficult operation. Logs were cut shorter than desired so as to provide the added maneuverability required during the skidding operation.

The damage caused by chemical anti-plant agents to the forests of South Vietnam can also be presented under two-

18. Ibid., p. 29.

19. Westing, No. 1, p. 77.

heads: i) virtually complete obliteration and ii) partial damage. The first category comprised the forest land that was sprayed four or more times. This category of virtual obliteration covered about 202 thousand hectares of which 151 thousand were mangrove (a highly sensitive type of forest to chemical agents).²⁰ The second category comprised forest that were sprayed one to three times. This area covered some 1.3 million hectares. The first of these categories experienced between 85-100% tree mortality, whereas the second experienced between 10 and 50%. It was estimated that one spraying resulted in a merchantable timber loss of 10%, two in a loss of 25%, three in a loss of 50%, four in a loss of 85% and five or more in a loss of essentially 100%. On the basis of these figures, one finds that the direct timber loss approximated 19.6 million cubic meters, giving an average of 17.6 cubic meters per hectare. Such was the devastating effect that on calculation it would take about 40 years without any further logging to recoup this level of loss.

The damage caused to the forests of south-Vietnam by Rome ploughs can be presented in one category - that of complete obliteration. This category comprised of 325 thousand hectares.

20. SIPRI Yearbook, 1978, No. 4, p.79.

On summation by combining the separate estimates, a total of 568 thousand hectares, representing 5% of forest lands of South-Vietnam (3% of the entire region) was completely devastated. The partially damaged forest lands was an additional 5.6 million hectares, representing 54% of the forest lands of South-Vietnam (32% of the entire region).²¹ On the commercial aspect i.e. merchantable timber losses in South-Vietnam, a total of 75 million cubic meters (15% of the standing merchantable timber crop) was ravaged. Of the secondary forest products which were of great local importance - charcoal for fuel, tannin from bark of various mangrove species and cinnamon from the bark of cinnamomum trees were also considerably ravaged.

b) Rubber Plantation

A large area of Indo-China has under it rubber plantation which assumes tremendous economic significance owing to its commercial values. Up-to-date methods of culture and exploitation, together with highly favorable climatic and soil conditions make this region the most productive one on a unit-area basis. It was most unfortunate that the region witnessed the extraordinarily intense military activity during the period 1961-75. The means of

21. Robert Del Tredici, At Work in the Fields of the Bomb (London: Harrap, 1987), p. 112.

warfare - principally bombing and shelling, herbicidal attack and Rome Ploughing, tremendously damaged the rubber industry.

In South Vietnam, the destruction of rubber trees and disruption of processing facilities resulted in a sharp decline in rubber production. By early 1967, more than 20 thousand hectare of rubber plantations had suffered herbicidal damage of varying extent.²² By the end of 1968, 30% of the rubber plantations of South-Vietnam had reportedly been destroyed from all war causes and 60% of the national rubber output wiped out.

In Combodia, some 30% of the rubber trees suffered damage during one brief period in the spring of 1969. The military action in Combodia during and after 1970 caused enormous additional damage to the plantations and disrupted the major processing facilities, thereby virtually wiping out rubber production in that country.

Bombay and shelling creates war wounds in rubber trees which allows easy passage of fungus. The resultant fungal rot saw 80% of the rubber trees being blown over by the wind. Herbicidal attack rendered rubber trees leafless.

22. Kenneth F. Hare, "Climate, Drought and Desertification", Nature and Resources, vol. 20, No. 1, Jan-March, 1984. p. 77.

c) Agricultural Crops

In its pursuit of the war, The USA carried out a routine military policy of systematic, large-scale and indiscriminate crop destruction. This relentless exercise began as early as 1961 and continued until 1971. The US Chief-of-Staff in South-Vietnam directed that all US forces wage 'economic warfare', of this sort as a major component of their combat operation against the 'Viet-Cong' enemy. Rice, salt, medicines and various other crops were singled out for destruction. The aim was to deny food (rice, cereals and broad leaf crops) to the Viet-Cong and their sympathizers and to direct the Viet-Cong manpower to crop production and hence weaken their military strength. Although much of the US 'economic warfare' was carried out from the air, a significant amount was also waged by ground forces. The introduction of innovative crop destruction techniques added a new level of efficiency and was enjoyed by all. These ground operations were referred to as 'environmental adjustment', or else as 'coconut raids'.²³ They were merely a matter of destroying the coconut and mango groves along with other fruit orchards, the paddy dikes and then the village structures themselves.

The main avowed purpose of the USA crop destruction programme was to deny food to the enemy soldier. The enemy

23. Ibid., p. 79.

in question - the 'Viet-Cong' - had a strength of about 600 thousand (3% of the Vietnamese population). However, since this force controlled at least four-fifth of the rural economy of South Vietnam it hence became imperative for the US war strategy to destroy enormous amounts of food crop.²⁴ This destruction was accompanied by intentional means brought about by aerial spraying of anti-plant agents and by incidental destruction - which was the side-effect of the spray missions. The intentional mode of employing Rome ploughs resulted in massive obliteration. Five northern provinces of South Vietnam were badly razed between 1969 and 1971, it included razing of hundreds of hamlets, and leveling of many thousands of hectares of rice fields and orchards.²⁵ The most notorious of cases of annihilation by the Rome ploughs was Ben Suc. This village with a farming community of 3,800 inhabitants in west-central Binh Duong province was completely ravaged. In fact it was intentionally carried out in order to launch operation, 'Cedar Falls' - a massive 'search'-and-destroy', operation.²⁶

24. Arthur. H. Westing, ed., *Herbicides in War: The Long Term Ecological and Human Consequences* (London: Taylor and Frances, 1984), p. 210.

25. *Ibid.*, p. 215.

26. *Ibid.*, p. 219.

d) Wildlife

The effect on the fauna is usually an indirect one, stemming from the imbalance of the habitat. Not only does the military operations decimate the vegetative cover but also decimate the sources of food and shelter of the associated animal life. The destruction of wildlife habitat was one of the pervasive concomitants of battle damage in South-Vietnam. The mangrove estuaries that were laid waste saw the rich avian fauna population decimated. The aquatic fauna suffered as well. The war dealt the coup de grace To the already endangered Kouprey species and the large fresh water tarpon were locally extirpated from the Mekong Delta region.²⁷ The larger wildlife like the deers, gaurs and elephants who were instinctively incapable of deserting their home territory also perished. The herbicidal attack affected much of the livestock. The larger domestic animals like water buffaloes, zebus and mature pigs though recovered but smaller ones like chicken, ducks and young pigs suffered severely.²⁸ Digestive problem, anorexia (loss of appetite) and fasciculation (muscular twitching), were some of the prime disorders the animals suffered from. The poultry became partially paralysed and wild birds became disabled.

27. Arthur. H. Westing, ed., Environmental Warfare: A Technical, Legal and Policy Appraisal (London: Taylor and Francis, 1984) pp. 121-131.

28. Westing, No. 24, p. 111-113.

Low Intensity Warfare and It's Effect on the Environment

Since post-WWI much of the fighting has been on a low intensity -fighting generally done of the guerrilla variety. Since 1945, the chief type of war waged has been of the local, colonial or civil variety with irregular, guerrilla tactics employed by one or both sides. Much of the employment of regular forces has been in counter-operations. It has been calculated that from 1945 to 1975, there were 54 colonial and civil wars with 8 million victims as opposed to 17 conventional, international wars causing 2.9 million deaths.²⁹ Keeping this in mind it can be noted that small wars involving guerrilla warfare have been of overwhelming significance. In contemporary times too this low intensity warfare is prominently spread around the globe.

Since theorists and commentators on guerrilla fighting all stress the importance of geographical factor in determining the outcome which, involves an intense exploitation of the character of the landscape, hence, a connection related to the disruption of the eco-system through the strategies and tactics of guerrilla warfare becomes clear and obvious. In his treatment of guerrilla

29. Frank Barnaby, ed., Future War: Armed Conflict in the next decade (London: Multimedia Pub., 1984) p. 11.

warfare Von Clausewitz cited five general conditions for its successful pursuit.³⁰

- i) That war is carried on in the interior of the country.
- ii) That the outcome cannot hinge on a single battle.
- iii) That the theatre of war extends over a wide area.
- iv) That the national character is favourable to war.
- v) That the country is irregular and difficult, being mountaneous, Wooded or swampy or because of the kind of agriculture. i), iii) and v) strongly pertain to the geographical and tropographical factors. Given the location-oriented condition in which guerrilla warfare and counter-operation take place it is inevitable that the environment of the region becomes adversely affected either through deliberate modes or incidental resultant.

Zone of Operations

Securing a base of operation is the fundamental requirement in a guerrilla struggle. Its establishment assumes a particular importance because guerrilla warfare is generally a protracted struggle and since the guerrillas are a weaker party, they need a safe rear and a hinterland in which they may operate somewhat freely. Base, a need for

30. Carl Von Clausewitz, On War, Translated by J.J. Graham (London: Routledge and K. Paul, 1949) pp. 363-375.

it, therefore, becomes essential to the survival of the guerrillas. To establish and maintain it becomes imperative.

The choice of a viable base must with Guerrilla warfare modes meet certain conditions. Successful guerrilla campaigns over the decades have been conducted from various types of base: Russians partisans during World War II operated from swamps and huge forests; Lawrence of Arabia directed his guerrillas from vast empty deserts; Mao, Tito, and Castro established their bases in remote mountains.³¹ It can be seen from the above cited examples of zone of operations that there is one shared characteristic i.e. a difficult terrain which is not easily accessible by the enemy. It is only after the terrain is established that various other tactical modes are incorporated into the warfare.³²

Strategically speaking guerrilla war is usually defensive. The base or the terrain, be it either mountaneous or forested or a desert becomes strategically a hide-out from were offensive tactics in the form of indirect methods like 'sparrow-tactic', 'sack tactic', 'hit-the-heart

31. Ibid., p. 376.

32. T.E. Lawrence, Revolt in the Desert (New York: Doran, 1927) pp. 160-165.

tactic', 'reinforcement-resisting and post attacking tactic', 'post-circling and reinforcement - attacking tactic', are employed.³³

a) Mountain Terrain

The effectiveness and strength of defensive mountain warfare is derived from two main factors: first, the difficulty of moving long columns over mountain roads, and second, the extraordinary degree of strength attained by a small post whose front is covered by a steep mountainside while its flanks are supported by deep ravines. Keeping these two points in perspective it viably becomes an area of immense strength for the guerrilla movement. The terrain offers powerful resistance through its natural obstacles. The guerrillas concentrate on forming a union of its outfit to the terrain. By doing so, they defend the mountain and the mountain defends them.³⁴

b) Marshy Terrain

Certain types of low-lying country, with minor rivers interspersed with marshy banks offer good refuge for insurgents. The striking feature about this terrain is the

33. Che Guevara, On Guerrilla Warfare Translated by Major H. Paterson (New York : Praeger, 1961), pp. 18-51. Also Mao Tse-Tung, On Guerrilla Warfare. Translated by S.B. Griffith (New York: Praeger, 1961) , pp. 111-121.

34. Clausewitz, No. 30, pp. 417-423.

difficulty it exhibits in passing through it. It is far more difficult to cross than a river. It offers a key strategic defense for the guerrillas by keeping the counter-guerrilla forces at bay.³⁵ This is so because swamps prohibit the building of bridge. This tremendously affects movements of the counter-forces, unless there are dikes but dikes, for one thing is not so quickly built as a bridge; for another, there are no temporary means by which troops can get to the far side to cover its construction. The simplest means would be using planks but it too becomes ineffective for transporting heavy material.

c) Forest Terrain

Owing to the nature of the density of the forest, it could either be 'close terrain' (dense, impenetrable forest) or 'open terrain'³⁶ (woodlands, grass covered plains, clearings traversed by a large number of paths). The insurgents in their defensive line of planning tend to keep the forest at the rear. If they were to fight with a forest in front, it would be like a blind man fighting a man who can see. The forest is used as a screen for movements and as a cover to facilitate eventual retreat. This occurs in 'open- terrain'. In the impenetrable 'closed terrain'

35. Ibid., pp. 447-450.

36. Mao Tse - Tung, No. 33, pp. 52-59.

forests, where roads are the mode of transportation and movement, a more battle-oriented scenario is presented. Forests here act as a launch-board for ambush and skirmishes.

d) Desert Terrain

Deserts rarely permit unlimited off-road vehicle movement. In addition to loose sand, abrupt changes in slope also restrict movement. Erosion in deserts tends to produce steeper and more angular hillsides. These steep slopes with 'Wadi' banks create obstacles to cross-country movement. In addition to restrictions on movement because of the surface forms the lack of vegetation affects observation and concealment.³⁷ Since the local guerrillas are so well habituated to the environment and the topography of the region hence it makes them naturally superior players in applying their tactical modes against the counter-operators, who are much hindered by the extremely harsh desert environment.

It can be seen from the above terrain topography that the natural environment provides the facilities for guerrilla operations, either as partisans in the hills and mountain or as units in the jungle or desert. To carry

37. T.E. Lawrence, Seven Pillars of Wisdom (New York: Doubleday, 1935) pp. 89-101.

their goal they generally involve perfidious methods of warfare which effects the ecology of the area. It becomes even more adverse when counter-measure operations are taken in order to overpower the guerrillas in their natural habitat. Such measures often involve defoliant weapons or other chemical weapons. Intentional measures like clearing forests to flush out the activists leaves but a big scar on the ecosystem of the region.

Counter-measure Operations

It has been argued as to what is the right approach to countering insurgent movements. Does it lie in the political, economic and social fields and by doing so winning the heart of the people or by military means showing in effect the toughness of the government in not bending to demands. The arguments are relative and varies owing to different scenarios.

Military means, nonetheless, has often been resorted to in dealing with insurgents engaged in guerrilla warfare it also at times becomes indispensable because all other measures (of social, economic and political nature) may prove futile until the counter-forces are successful on the battlefields. Given the natural advantage of the guerrillas owing to their habituated surrounding the counter-forces employ various strategic means and tactical modes which

casts a detrimental effect on the ecology. In order to maintain the "initiative in the fighting", counter-forces employ a 'search and destroy' means.³⁸ This tactics pertains to flushing out the insurgents like digging the mole out of the hole. A systematic action of destroying and damaging the natural habitat of the guerrillas takes place through arms of destruction. In Vietnam in order to counter the Viet-Cong guerrillas, the US forces used the 'Hammer and anvil' exercise with aggressive patrolling. This was connected with the 'cordon and sweep' operations.³⁹ It was a lethal combination which deliberately damaged the ecosystem of the region.

In an unconventional warfare of this kind where 'hit and run tactics' are responded with 'search and destroy, means' the environment is the sufferer because in this warfare the topography and the general eco-system is so inextricable linked to the means and modes of operation.

As the Vietnam war demonstrated, means like forest removal machines and anti-plants agents left a unrecoverable damage on the environment. As one of the commander in the

38. D. Galula, Counterinsurgency Warfare (New York : Praeger, 1964), pp. 33-52.

39. J. Pustay, Counter-Insurgency (New York : Free Press, 1965), pp. 117-121.

Vietnam war noted "The B-52 bomber is the battle axe of this war and our plough the scalpel... land clearing in South-Vietnam may turn out to be the war's No. 1 tactical development"⁴⁰

With the world today witnessing tremendous ethnic upheaval with taking up of arms against each other and against the state, it would hence seem - at least from the military perspective - that various environmentally disruptive weapons and techniques of the conventional and uncoventional variety will leave a plethora of problems on the environment.

40. In R. Lindholm, The First Five Years (East Lansing: Michigan University Press, 1969), p. 172.

Appendix to Chapter II

Ecologically Disruptive Wars: A Selection

1. Persian - Scythian War of 512 BC.

- a) Description: Successful attack by Persia (now Iran) under Darius the Great upon Scythia (now part of Soviet Russia)
- b) Location: Northern hemisphere: temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : As the Scythians retreated, they practiced a self-inflicted scorched earth policy so as to hinder the Persian advance.

2. Peloponnesian War of 431-404 BC.

- a) Description : Conquest by Sparta of Athens.
- b) Location : Northern hemisphere : temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption: Annually repeated destruction of the Athenian grain crop by the Spartans.

3. Third Punic War of 149-146 BC.

- a) Description : Successful attack by Rome upon Carthage (present Tunis).
- b) Location : Northern hemisphere : temperature habitat.

- c) Type : Inter-state War.
 - d) Ecological disruption : The city was razed.
4. Hunnic Incursions of the 4th and 5th Centuries AD.
- a) Description : Conquest by the Huns (under Atilla) of Western Asia and Eastern and Central Europe.
 - b) Location : Northern Hemisphere : Temperate habitat.
 - c) Type : Inter-state Wars.
 - d) Ecological Disruption : Wanton ravaging of the countryside everywhere that resulted in great waves of migrations.
5. Sacking of Rome of 455.
- a) Description : Successful attacks by the Vandals upon Rome.
 - b) Location : Northern Hemisphere : Temperate habitat.
 - c) Type : Inter-state War.
 - d) Ecological Disruption : Unrestrained pillaging and destruction of Rome.
6. Mongolian Incursions of C. 1213 to C. 1224.
- a) Description : Conquest by the Mongols (under Genghis Khan) of most of Asia and eastern Europe.
 - b) Location : Northern Hemisphere: Temperate habitat.
 - c) Type : Inter-state.

- d) Ecological Disruption: Annihilation of all unappropriated crops and livestock; in Mesopotamia (now Iraq) took place the deliberate destruction of the major irrigation works on the Tigris river upon which the agriculture of the indigenous civilization depended.

7. Thirty Years War of 1618-1648.

- a) Description : Successful war by the Protestant armies of the German States against Catholic armies of the Holy Roman Empire (now Austria, etc.), most of the action occurring in central Europe.
- b) Location : Northern Hemisphere: Temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : Population decimated, agricultural fields widely devastated and villages pillaged by the thousands.

8. Franco - Dutch War of 1672-1678.

- a) Description : Successful invasion by France (under Louis XIV) of the Netherlands.
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : Self-inflicted large-scale flooding by the Netherlands in order to impede the advance of the French forces.

9. Napoleonic Wars of 1796-1815.

- a) Description : Wars of aggrandizement by France against a variety of European states.
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Inter-state Wars.
- d) Ecological Disruption : Vast numbers of deaths and disease : as the French advanced through Russia during the summer of 1812, the Russians practiced a self-inflicted scorched earth policy in order to impede the enemy advance.

10. Tai Ping Rebellion of 1850-1864.

- a) Description : Unsuccessful attempt by the Tai-Ping (Great Peace) movement to overthrow the Chinese Government (The Manchu).
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Civil War.
- d) Ecological Disruption : The overthrow was attempted with great violence and much pillaging and was crushed with equal or greater violence; China employed, large-scaled scorched earth tactics in order to starve the rebels into submission. Immense loss of human population and natural resources.

11. US - Navaho Wars of 1860-1864.

- a) Description : Conquest by the USA of the Navaho.
- b) Location : Northern Hemisphere : Temperate and desert habitat.
- c) Type : Inter-state Wars.
- d) Ecological Disruption : The USA deliberately destroyed the sheep and other livestock as well as the fruit-tree orchards and other crops of the Navaho as part of its successful strategy of subjugation.

12. US Civil War of 1861-1865.

- a) Description : Thwarted secession of 11 Southern States (the Confederate States of America) from the USA (under Lincoln), the confederacy having wished to maintain Black Slavery.
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Civil War.
- d) Ecological Disruption : A major strategy of the USA was to starve the rebellious states into submission; scorched earth tactics were carried out with special vehemence in Virginia, where the agriculturally rich 700 thousand hectare Shenandoah Valley was systematically devastated during Sept-Oct. 1864 and in Georgia where perhaps 4 mill hectares were laid waste.

13. US - Indian Wars of 1865-1898.

- a) Description : Conquest by the USA of the Dakota (Sioux), Apache, Comanche, Cheyenne and other tribes.
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Inter-state Wars.
- d) Ecological Disruption : The US strategy of subduing the Indian included the systematic destruction of their food stores, crops and game. The wanton slaughter of bison herds on the Great Plains was for the USA a largely fortuitous contribution to the undermining of the Indians' means of livelihood.

14. Philippine Insurrection of 1899-1903.

- a) Description : Thwarted attempt by the Philippines to gain its independence from the USA.
- b) Location : Northern Hemisphere : Tropical habitat.
- c) Type : Colonial War.
- d) Ecological Disruption : A major means utilized by the USA to crush the insurgency was the systematic disruption of the villages, storehouses, crops and livestock.

15. World War I of 1914-1918.

- a) Description : War between the Central Powers against the Allies.

- b) Location : Primarily Northern Hemisphere, primarily Europe; primarily temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : Great loss of life, large-scale employment of chemical warfare agents; enormous amounts of largely incidental devastation of agricultural forest lands.

16. Second Sino - Japanese War of 1937-1945.

- a) Description : Japanese invasion of China, eventually repulsed in conjunction with World War II.
- b) Location : Northern Hemisphere : Temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : In order to stop the advance of the Japanese, the Chinese in June 1938 dynamited the Huayuankow dike of the Yellow river, near Chengchow; the ensuing flood waters ravaged major portions of Honan, Anhwei and Kiangsu provinces; the crops and topsoil of several million hectares were destroyed, as were 11 cities and more than 4 thousand villages; at least several hundred thousand persons drowned and several million more were left homeless, the river was not brought back under control until 1947; the overall war resulted in a large number of fatalities.

17. World War II of 1939-1945.

- a) Description : A complex of several dozen more or less. distinct wars. An unsuccessful war of aggrandizement by the Axis - i.e. Germany (under Hitler), Austria (annexed by Germany), Italy, Japan, Hungary, Bulgaria, Romania, Finland, etc. against the Allies - i.e. France, the UK, Poland, The USSR, the USA etc.
- b) Location : Primarily Northern Hemisphere : Primarily Temperate and tropical but also desert and arctic habitats.
- c) Type : Inter-state War.
- d) Ecological Disruption : Tremendous loss of life, enormous amounts of a agricultural, forest and other ecological devastation; two cities - Hiroshima and Nagasaki - destroyed by nuclear weapons; numerous tropical Pacific ocean island ecosystems devastated; some 200 thousand hectares of Dutch agricultural lands destroyed by Germany through international salt-water inundation; atleast 1.2 million hectares laid waste by Germany in far northern Norway as an impediment to an expected Soviet advance: profligate utilization of natural resources by many nations.

18. Korean War of 1950-1953.

- a) Description: Invasion by North Korea of South Korea, the former assisted by China and the latter by the USA and 14 other nations under the UN, in an unsuccessful attempt by North Korea to reunify the two Koreas.
- b) Location: Northern Hemisphere ; Asia : Temperate habitat.
- c) Type : Inter-state War.
- d) Ecological Disruption : High level of incidental forest and other wild-land disruption.

19. Algerian War of Independence of 1954-1962.

- a) Description : Successful attempt by Algeria to gain its independence from France.
- b) Location : Northern hemisphere; Africa ; largely Desert habitat.
- c) Ecological Disruption : Major rural population displacements and destruction of villages, including the displacement of upto two million people.

20. Angolan War of Independence of 1961-1975.

- a) Description : Successful attempt by Angola to gain its independence from Portugal.
- b) Location : Southern Hemisphere ; Africa; tropical habitat.

- c) Type : Colonial War.
- d) Ecological Disruption : Population displacements ; Portuguese tactics included herbicidal crop destruction in villages not under their control.

21. Second Indo-China War of 1961-1975.

- a) Description : A complex of more or less distinct conflicts confounded by massive US involvement in Vietnam, later in Laos and also an ancillary war against Cambodia.
- b) Location : Northern Hemisphere; Asia: Tropical habitat.
- c) Type : Inter-state.
- d) Ecological Disruption : The US Strategy involved massive rural area bombing, chemical and mechanical forest destruction; destruction of food stores, destruction of hospitals and displacement of population - in short massive intentional disruption of both the natural and human ecologies; enormous loss of life and massive displacement of population.

22. Nigerian Civil War of 1967-1970.

- a) Description : Unsuccessful attempt by the South-Eastern region, known as Biafra, to secede from Nigeria.
- b) Location : Northern hemisphere; Africa; Tropical habitat.

- c) Type : Civil War.
- d) Ecological Disruption : A major strategy employed by Nigeria to suppress the revolt was to blockade and starve into submission food-poor Biafra; the result was the an estimated 1.5 million Biafrans, primarily 1 bos, starved to death.

23. Bangladesh War of Independence of 1971.

- a) Description : Successful attempt by Bangladesh, with the aid of India, to secede from Pakistan.
- b) Location : Northern Hemisphere; Asia, Tropical habitat.
- c) Type : Civil War also Inter-state War.
- d) Ecological Disruption : Enormous upheaval among the inhabitant (Bengalis) of Banglaldesh, 10 million of whom were displaced. There was much coincidental flood damage as well.

24. East Timor War of 1975-1976.

- a) Description : Annexation by Indonesia of briefly independent East Timor (formerly Portuguese).
- b) Location : Southern Hemisphere ; Pacific Ocean island, Tropical.
- c) Type : Inter-state War.
- d) Ecological Disruption : Major disruption in Timorese population and also massive displacement.

25. Kampuchean Insurrections of 1975-1977.

- a) Description : UNsuccessful attempts by insurgents to revolt against the newly established government, reportedly involving massive repression and massacres by government forces.
- b) Location : Northern hemisphere, Asia, tropical habitat.
- c) Type : Civil War.
- c) Ecological Disruption : Forced rapid conversion of the society to a primitive agrarian one based on many small co-operatives presumably in response to the legacy of the second Indo-China war, involving an extraordinary disruption of the human ecology.

**THE FOCUS ON SOUTH ASIA:
ENVIRONMENTAL CONCERNS**

Environmental Concerns in South-Asia

To the four great plagues of mankind - war, famine, pestilence and death - can be added yet another: environmental degradation. Environmental issues initially became of concern to the richer countries when industrial and other forms of pollution emerged as a serious threat to the well-being of their people, and which created in their wake pressure groups seeking to remedy the situation. But environmental issues remained unnoticed in the countries of the developing world until much later for a variety of reasons: The low level of industrialization did not generate the same types of concern as in the countries of the North; public interest groups were virtually non-existent because of a generally low level of education and mass participation, much of the media was controlled by the government, which restricted publicity concerning matters of public interest; and the overriding national priority was economic development, even at the expense of the natural environment.

However, a general Third-World awareness of environmental issues developed after United Nations General Secretary U. Thant's numerous public expressions of concern regarding environmental degradation, and the subsequent UN Conference on the Human Environment in Stockholm in June

1972,¹, which drew the attention of rich and poor countries alike to this disturbing global phenomenon.

In South-Asia, which is the focus of this study, environmental degradation has been taking place for decades, but the problem was completely overshadowed by security preoccupations. However, after the supremacy of the Indian Army was established in the subcontinent in 1971, the primary security concerns gradually began to shift from traditional defence issues to social matters such as poverty and health. As the frequency and intensity of natural disasters in the subcontinent increased, they began for the first time to be linked to issues such as population increases and the tampering with the local environment. The material damage and loss of life resulting from these disasters, the social dislocations caused by developmental activities, and the ensuing political unrest in the form of ethnic clashes, civil strife and insurgencies have catapulted the issue of environmental degradation and its links with domestic and regional security onto the centre stage of national politics.

1. World Commission and Environment and Development: Our Common Future (The Brundtland Report) (Oxford: 1987), p. 5.

The main reasons of the concern of environmental issues in South-Asia stems from how:

- i) The sub-national groups while shifting their allegiance from the centre to the periphery and in doing so increasing the possibilities of political disorder, civil strife and insurgency put stress on the environment and how the environments decline further affects the political disorder.
- ii) Environmental devastation faced by a country due to social conflicts, especially those originating from beyond its borders, can sour bilateral relations.
- iii) Environmental calamities and degradation can trigger policy choices which can catalyse a potential conflict or aggravate an existing one.²

The above reasons of concerns are evident in South Asia for the region houses almost a quarter of the world's population with diverse ethnic, religious, social and political grouping. With the rapidly eroding natural resource base this diversity has catastrophic seeds for the eco-system of the region especially when they take the form of conflicts between them for the limited resources.

2. Shaukat Hassan, "Environmental Concern in South-Asia", Adelphi papers, No. 262, 1991. p. 5.

Environmental Concern

a) Population

From 238m in 1901 India's population has soared to 860m in 1991 and is estimated to reach 1.16 bn in 2010. Its current population growth rate is 2% a year. The rate of urban growth has also increased from 2.3% annually in 1951-61 to over 3.9% at present. At this rate, India will have an estimated 480 m people or 41% of its total population living in urban centers by 2010.³

The population of Bangladesh has grown from 42 m in 1951 to over 116 m by 1991. By the year 2010, it will be 177 m. The urban population is expected to expand from about 16 m at present to 59 m by 2010, at the current urban growth rate of 7%.⁴

Pakistan has a population growth rate of 3%, the second highest on the region. At this rate, the present 118 m. will swell to 195 m by 2010. Pakistan's urban population has also jumped from 15.4% of the total in 1947 to 28% in 1991.

3. 1991 World Population Data Sheet (Washington, Population Reference Bureau, 1991).

4. Ibid.

Nepal has also experienced rapid population growth in recent decades, with an average annual rate of 2.5%. By 2010, the Kingdom will have an estimated 31 m. people. Migration is an important demographic phenomenon in Nepal, with massive emigration from the higher elevations in the last two decades. Between 1950-80, the urban population in Nepal increased th ith an average annual growth rate of 5%.

Bhutan's popul th rate has been affected by the migration of m Nepal and is estimated to double in the next

Sri Lanka's po increased from 12.3 m in 1971 to 17.4 m in 1991. T een no expansion of the growth rate of its urban n (22%) in the last decade. Though its annual c is only 1.5%, it may decline further in view of gency that has enveloped the island since 1985.

Table: Demographic characteristics on South - Asia.

Country	Land Area (Km ²)	Current Population	Growth rate in %	Population doubling time	Average population density (p/km ²)
Bangladesh	143,998	116.6	2.4	28	810
Bhutan	46,500	0.7	2	35	15
India	3,166,829	859.2	2	34	271
Nepal	147,189	19.6	2.5	28	133
Pakistan	796,095	117.5	3	23	148
Sri Lanka	65,610	17.4	1.5	47	265

Source: 1991 World Population Data Sheet.

It is evident from the 'Table' that south Asia is a heavily inhabited region with high population growth rates and huge rural populations. These factors have affected the traditional balance between the regions population and its environmental capacities. Rising subsistence needs are placing ever larger demands on water, agricultural lands, forests and coastal habitats and, as these natural resources deteriorate or diminish, they set in motion a continuous

6. Ibid.

stream of 'environmental refugees' who flock to urban and marginalised areas to eke out a living.⁷

In India, Bangladesh and Pakistan the resource to population ratio is extremely low, which suggests that, in order for these people to survive, there will be a general tendency to exploit resources to a level where the natural resource base, may no longer be renewable. The population pressure on Nepal's limited resource base is also mounting, and at present about seven people are dependent for their livelihood on each hectare of arable land, a figure comparable to that of 8.5 persons per hectare in Bangladesh. As deforestation in the hill and the mountain zones continued for decades, migration to the Terai region in the south, which borders on India, and to India itself, greatly increased.⁸

b) Deforestation

The impact on the environment of the population increase in south-Asia is clearly evident in the forest land. Forests are indispensable for ecological, social;

7. Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security", Journal of International Studies, Vol. 19, No. 3, 1990. pp. 461-76.

8. R.H. Ullman, "Redefining security", International Security, Vol. 8, No. 1, 1983. pp. 129-53.

economic and cultural reasons. They provide fruit, fiber, medicine, firewood, timber and shade for human consumption, as well as fodder for livestock. They conserve the soil, maintain its fertility and store water. By providing a habitat for wildlife, they protect as well as stimulate biodiversity.⁹ They also clean the air by absorbing carbon-dioxide and releasing oxygen, and play an important part in regulating the climate.

The term 'deforestation' refers to many different activities, including the cutting of wood for fuel, commercial logging, shifting cultivation, forest clearing for cropping or grazing, gathering medicinal plants, mining, flooding by reservoirs and burning. To this various dimensions of deforestation can be added the effect of ethnic conflict and insurgencies - counterinsurgency operations on the forest resources of the region.¹⁰

Satellite imagery and remote-sensing techniques reveal that only 15% of land area in south-Asia is forested today. In India, the National Forest Policy passed in 1952

9. Michael Renner, "National Security: The Economic and Environmental Dimensions", World Watch Paper, No. 89, 1989. pp. 17-19.

10. The Centre for Science and Environment, The State of India's Environment: The First Citizens' Report (New Delhi, CSE, 1987), pp. 25-32.

stipulated that 60% of the hill and mountain regions and 33% of the rest of the country should be under forest cover. Yet 85% of the country has very little or no tree cover.

In Bangladesh, total tree cover constitutes only 9% of the land area, and is therefore well below the universally accepted minimum of 25%. Of the total available hill forests, 40% have been converted into plantations, 17% have been set aside for the rehabilitation of the 16,000 tribal families made homeless by the construction of the Kaptai reservoir in 1963 and almost 48% have fallen to human encroachment. Over 25% of the inland deciduous forests have been felled. It appears that the major reasons for the loss of forests in Bangladesh are illegal logging to satisfy burgeoning demands for timber and firewood and salinity intrusion.¹¹

In Pakistan, the demand for firewood and agricultural land has denuded its forests in the north, while those in the low-lying areas along the major rivers have been depleted by flood reduction techniques. Much of the forests in the sparsely populated areas along the border with Afghanistan have been destroyed by the influx of Afghan refugees. The annual rate of deforestation is 0.3%.

11. Danish International Development Agency, Bhutan: National Environmental Strategy (Copenhagen: DANIDA, 1989),

In Sri Lanka, deforestation is widespread. Although the central hills and the south-southwest and western hills contained much of the country's forest resources, they now represent only 3% of the total forest area. The annual rate of deforestation is 1.5%.¹²

In Nepal, actual tree cover is estimated to be over 34% of the country's land area. The lowland region of the Tarai appears to be the most depleted; approximately one hectare of forest land is lost for every two persons migrating south. The annual rate of deforestation in Nepal is 4.3% . The blame goes to people and policies of the state. The hill dwellers are chief among them. After the government nationalised the forests in 1978, deforestation increased because the hill people felt little compulsion to preserve the forests because of the limitations imposed.¹³

Forests in Bhutan appear to play an equally crucial role, protecting the hillsides against erosion and stabilizing the climate. At least 60% of Bhutan's land area is forested, which is an enviable figure compared to the rest of south Asia. However, rapid increases in population

12. Hassan, n. 2, p. 10.

13. Ibid., p. 12.

and development activities in recent years are contributing to substantial deforestation. For instance, development projects have created a network of roads which provides access to previously remote areas for many grazers and firewood gatherers, resulting in extensive deforestation.¹⁴

In all the above cases, the issue of deforestation seems to have found resonance in the volatile socio-political set-up of the sub-continent.

c) Soil Erosion and Siltation

Deforestation may have also played a role in soil erosion and siltation, both of which have become serious problems in south-Asia. Soil erosion can be the result of man's activities as well as natural catastrophe (like earthquakes). Some rivers, such as the Sapta Kosi in Nepal, create inland deltas and channels which shift as river-beds rise, displacing local populations. Soil erosion also causes flash floods in many places of Nepal, Bhutan and Pakistan.

14. Shaukat Hassan, "Problems of Internal Stability in South-Asia", PSIS Occasional Papers, The Graduate Institute of International Studies, No. 1/1988, 1988. pp. 70-72.

d) Land Degradation

In addition to top-soil loss, cattle grazing, water logging and salinity have significantly contributed to land degradation in the region. Land degradation adds to the economic as well as socio-political problems of the region. Thus, as the quality of agricultural land in south-Asia deteriorates, it creates serious social and political dislocation.

The Environmental Concerns & it's Relation to Conflict in the South Asian subcontinent

As mentioned above, south Asia is a region of high environmental stress caused by a variety of environmental problems, such as huge population, deforestation, soil erosion and siltation, land degradation, floods, droughts, storms earthquakes, sea-level rise and pollution. Of these, three seems to have tremendous bearing on the social conflict in south-Asia: Population, Deforestation and land.¹⁵

The high growth-rate of population has thrown off the balance between the regions demography and its environmental

15. Sanjoy Hazarika, "Bangladesh and Northeast Indian: Migration Land Pressure and Ethnic Conflict", Paper presented in a workshop, Ottawa, 1991.

capacities. The low resource-to-population ratio suggests that in order for the population to survive, there will be a general tendency to exploit resources beyond renewable limits. The increasing demands on water, agricultural lands, forests and fisheries have deteriorated or diminished these resources, setting in motion a continuous stream of ecological refugees. This has an unsettling effect on the domestic, political and social dynamics of the region. As affected communities vacate degradation habitats and transplant themselves in other localities, conflict often ensues between them and the host communities and local authorities. When such rivalries and conflicts become exacerbated, aggrieved communities turn to sub-national ideologies, parties and symbols to fight for their way of life.

The settling policies of the government or the displacement of people changes the ethnic balance of the region, creating fears and insecurity among the native tribal people about the continued sanctity of their distinct society surviving on the natural resource of the place.

The settlement in the Chittagong Hill Tract (CHT) in the southeastern part of Bangladesh has created enormous conflict between ethnic groups. Migration has spilled over to the bordering India states and created rivalries among

the existing communities with the migrants. The upshot has been an insurgency, with the insurgents resorting to violent modes of operation. Bhutan's environmental degradation in its southern provinces has led to a large exodus of illegal immigrants from its territory. Many of those evicted, however, have joined up with the Gurkha separatist movement.¹⁶

Deforestation, too has its affect on migration. The depletion of forests in the mountaneous region of Nepal has triggered a large-scale migration to the lower lands of the Tarai bordering on India. This has led to conflict between the hill-people and the Terai inhabitants. Owing to its fall-out affect across the border, has also brought the two states into confrontation. Deforestation, hence, can contribute to conflict both within states and between states. The states response to fight insurgency has led to armies deliberately destroying forests to flush out the terrorists: The operations in North-East of India; the Bangladesh Army in the CHT in its confrontation with the Chakmas; The Sri -Lankan Army in the Jaffna peninsula in its fight against the Tamil insurgents are prime examples. The Afghan conflict has also led to extensive deforestation in Pakistan along its border with Afghanistan, where the

16. CSE, n.6. p. 31-56.

refugee settlements are located.¹⁷

Since the population density in the subcontinent is one of the highest in the world hence, land becomes the principal and often the only asset. Competition to acquire this scarce commodity, whether for home-steading, cropping or social reasons becomes intense. Competition invariably breeds rivalry which leads to the marginalisation of a certain ethnic group leading to migration to different areas or settling on marginalised land.¹⁸ The twin factors of population pressure in Bangladesh and land availability in the Indian border states have created a powerful impulse for the growing landless to emigrate from Bangladesh, thereby broadening the base for inter-state conflict.

The environmental issues that affect the subcontinent are diverse and real. It is one of the prime breeders of conflict in the sub-continent. Conflict between ethnic identities and of group interests over scarce resources further puts stress on the environment which becomes detrimental to political, social and economic stability of the region.¹⁹

17. Asia 1990 yearbook (Hongkong, Far Eastern Economic Review, 190), p. 186.

18. Hassan, n. 14, pp. 35.

19. Ibid. p. 39.

**FOCUS ON SOUTH ASIA: POLITICAL
CONFLICTS, ENVIRONMENTAL
DEGRADATION AND THE ORIGIN
OF NEW CONFLICTS**

The Stages of Ethnicity and Ethno-Nationalisms in South-Asia

There are four stages that ethnic nationalities pass through to attain their objectives. There is firstly agitation and protest within the constitutional framework. Usually this takes the form of an ethnic-based party that receives the confidence of the ethnic community at elections to the legislature.¹ The outstanding examples are the All-India Muslim League in pre-partition India and the Akali Dal in the Punjab; the DMK and its variants in Tamil Nadu and the Kashmiri and Assamese movements, all in post-partition India; The Awami League in undivided Pakistan as well as the movements for an independent Pushtunistan, Baluschistan and Sind in Pakistan and finally the Tamil Federal Party in Sri-Lanka. This majority-minority discontent can be seen in Nepal, Bangladesh and Bhutan also.

Invariably there is failure to contain minority discontent due to the what might be called 'The time lag effect'.² The time lag implies that the majority ethnic

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1. Jeyaratnam, Wilson., describes 'four-stages' in "The Politics of Ethnicity and Ethno-nationalism in South-Asia", Contemporary South-Asia, Vol.2, No.3, 1993, pp.327.
 2. Arend Lijphart., The Quest for Self-Determination (Connecticut: Yale University Press, 1979), p.32.

decides to make some realistic concessions to the minority nationality, but these usually fall far short of the latter's aspirations. They are not actually compromises but measly attempts to pacify the dwindling ranks of the moderates in the minority elite. This is the 'too little too late syndrome'. Demands have escalated and there is a yawning gap between the majority ethnic-dominated state's promises and their implementation. The latter's leadership could indeed be willing to deliver on the compromises but are obstructed by oppositional forces competing within the

ruling as well as from oppositional parties and from single-issue oriented protest movements - such as those led by Buddhist monks, Hindu chauvinists and Muslim mullahas.³

The fourth stage witnesses political agitation among the disaffected minority nationality or nationalities being overtaken completely by armed militant groups. The latter refuse to accept concessions or compromises. The state comes face to face with 'armed struggle' and 'protracted civil war' accompanied by brutal violations of human-rights and environmental degradation in its modes of operation. The retaliatory actions by the armed resistance further leaves a telling effect on the populace and eco-system of the region. The consequences of which are civilian casualties, fleeing of refugees, erosion of democratic processes within the state and the natural habitat destruction.

Environmental Refugees

From the earliest days of human history, people have fled disaster and turmoil, abandoned degraded lands, or simply migrated in search of better life. In recent years, however, there has been a dramatic escalation in the numbers involved. Mass population movement and refugee emergence of

3. Arend Lijphart., "The Politics of Ethno-nationalism", Journal of International Affairs, No.1, 1973, p.71.

unprecedented magnitude and complexity have become a hallmark of the late 20th century, reflecting not only regional conflict but also growing economic disparities and the declining state of the world's environment.⁴ In South-Asia, millions of people have been displaced by ethnic clashes and counter insurgency programmes launched by the State. Huge flow of people have crisscrossed the region in search of more secure existence.

The definition of the world "refugee" is constantly evolving. The United Nations 1951 Convention relating to the status of refugees, amended in the Protocol of 1967, defines refugees as people who are outside their country of origin because of a well-founded fear of being persecuted "for reasons of race, religions, nationality, membership of a particular group or political opinion". The original narrow definition of "convention refugees", and the structures set up to deal with them, reflected conditions in Europe following World War II. The rise of conflict and civil-rights abuses in Africa and other less-developed regions, however, eventually led to the extension of the definition to include whole groups fleeing from dangerous circumstances such as war and civil disorder - that is, to

4. Kathleen Newland, "Ethnic Conflict and Refugees", Survival, Vol.35, No.1, Spring 1993, pp.81.

people who can no longer depend on the protection that the state normally affords its citizens⁵.

The cause of this massive flows in South-Asia lies in a host of intertwined political, social, economic and environmental factors as they do in conflict and human-rights abuse.⁶ One of the sources of ethnic conflict in south Asia can be attributed to large-scale population movements. The migration of different ethnic groups threatens to alter the demographic composition of the region. More important, it leads to competition between ethnic groups for scarce-resources. Such competition in turn, has two important consequences. It reinforces ethnic identification and group solidarity. Simultaneously, it can generate resentment against 'outsiders' who are seen as usurpers of the region's resources.⁷

The genesis of an environmental refugee encompasses a chain of events that may start with any number of social, political, or economic factors. (As Fig.3 suggests). These lead to physical changes in the eco-systems so that their

5. Ibid., p.83.

6. Ibid., p.91.

7. Sumit Ganguly., "Ethno-religious Conflicts in South-Asia", Survival, Vol.35, No.2, Summer 1993, pp.89.

SOCIAL DYNAMIC

Population growth; Failed land reform; Poor development planning; Failed disaster relief; No alternative employment; Poor protection of indigenous lifestyle and traditional Civil War; Global change.



ECO-SYSTEM ALTERATION

Degradation of soil and water resources; Loss of specific flora and fauna for local use; loss of habitat; outbreaks of pests and disease; increased frequency of droughts and floods.



TRIGGER EVENTS

Earthquake; landslides and flood; drought; killing of social terror



REFUGEES

Seek alternate land;
Enter Cities; Enter Refugee Camps;
Remain on land but become dependent on aid;
Emigrate;
Become militarily active;

productivity and resilience are reduced. A major force of nature, a disaster, acts as the "trigger" event that causes enormous dislocation.

The refugees by seeking alternate land bring in competition with the local inhabitants which invariably leads to conflict between them. This drives one of the parties or both of them to become militarily active. Taking up arms in the battle of survival brings the concerned state into play through the counter-measure policies.

South-Asia: Ethnic Conflict and the Refugee Issues. The effect on the environment.

Two major crises have emerged on an unprecedented scale in South-Asian societies during the 1980s. The first is the ecological crisis and the threat to life support systems posed by the destruction of natural resources like forests, land, water and genetic resources. The second is the cultural and ethnic crisis and the erosion of social structures.⁸ Though this can be viewed independently at the level of political action but the growing linkage of conflict and environmental degradation in the developing

8. Paul Kennedy., Preparing for the Twenty-First Century (London: Harper Collins, 1993), p.69.

world suggests that the two have to be viewed interdependently.

Bhutan

Bhutan is the last Himalayan Buddhist Kingdom to retain its independence. It is small in size, with only 600,000 inhabitants. However, it is sandwiched between two of the largest countries: India and China. Traditionally isolated both by geography and as a deliberate political strategy, it is now pursuing a policy of cautious modernisation. But of late much of this modernisation has been hampered with ethnic clashes resulting in sad environmental degradation.

The country's ethnic trouble stems from its resolve to preserve, the Drukpas culture and identity against the growing difficulties of absorbing the Nepali community. According to official estimates, Nepalis now make up some 28% of total population, but Nepali dissidents claim that this figure should be 50% or even higher.⁹ In the late 1980s the Bhutanese authorities took steps to curb the number of illegal immigrants in the South of the country. Since then at least 85,000 Nepalis from Bhutan have taken refuge in camps in Nepal. The Bhutan's Nepalis known as 'Lhotshampas'

9. John Bray., "Bhutan: The dilemmas of a small state", World Today, November, 1993, pp.213.

(Southerners) have been getting the rough treatment. Two events outside Bhutan appear to have influenced Thimpu's policy on the Lhotshampas. The first was India's annexation of Sikkim in 1974. Sikkim's political association with India had always been closer than Bhutan's, but the two Kingdoms nevertheless had much in common. Like Bhutan, Sikkim had experienced large-scale Nepali migration. By 1974 the Nepali population far outnumbered the indigenous Lepchas and Bhotias in Sikkim, and it was the Nepalis rather than the other two communities who called for integration with India.¹⁰ This set a worrying precedent and the Bhutanese looked at it with tremendous apprehension. The second event was the mid -1980s Grukha National Liberation Front (GNLF) agitation in Darjeeling which called for the creating of a Nepali - speaking state within the Indian Union. New Delhi resisted the creation of a separate state but sanctioned the establishment of a semi-autonomous Hill Council. This episode again highlighted the growing political power of Nepali-speakers outside Nepal - and in a region immediately adjacent to Bhutan.

These two events set the Bhutanese government on the offensive. It conducted strict census operation in the

10. Ibid., p.215.,

Southern part with a view to detecting illegal immigrants. It also made greater efforts to enforce the 'Driglam Namzha' regulations, particularly dress code, as part of its national integration policy. In response to these pressures, a group of Lhotshampas formed the People's Forum for Human Rights in 1989 and The Bhutan People's Party (BPP) IN 1990.

The events of 1990 mark a turning point in what has become known as the 'Southern problem'. Since then, the battle lines have been clear. From the governments point, the main threat stems from the 'ngolops' who since 1990 have launched a series of terrorist attacks, mainly on government targets. Countering it, the government has hit hard on the Lhotshampas by direct counter-terrorist attacks and by disruption of development initiatives.¹¹

Much of Bhutan's pristine eco-system has undergone severe disruption owing to both the community conflict (between Drupka and Lhotshampas) and the terrorist-counter - terrorist operations.

More so, this has led to thousand of Lhotshampa refugees fleeing to Nepal, creating hence, a new conflict-

11. Farzana Hossein., "Bhutan's Ethnic Problem: A Case of Fragile Ethnic Mosaic in South-Asia", Bangladesh Institute of International and Strategic Studies (BIISS), Vol. 14, No.1, 1993, p.29.

induced environmental degradation. By July 1993, there were 85,000 refugees in Nepali camps¹², and several thousand more were thought to be staying elsewhere in Nepal and northern India. The exodus naturally has caused tensions between Bhutan and Nepal.

Nepal

In this Himalayan land-locked country there has been of late serious ongoing conflict between dominant high-caste Hindus and some ethnic minorities. These conflicts are related to the land rights. In the ensuing process much damage has been done to the local eco-system. The parties in the conflict induced environmental degradation are the politically and economically dominant high caste (Brahmin, Chetri and Thakuri) Hindus and Buddhists on the one hand and the Animist ethnic minority groups the Limbu, Chepang and Tharu tribes on the other.

The Limbu of the Tibeto - Burmese tribe who live in the Illam district of far eastern Nepal, were the first human inhabitants of the region. From 1774, when Illam was forcefully incorporated into the Nepali state by Prithvi Narayan Shah, until 1886, the Kipat system enabled Limbu to maintain ownership and control over their tribal lands.

12. Ibid., p.32.

Under this system all land was under the Limbus and could not be sold to other ethnic groups. Since, the land was plentiful, the Limbus could not do all the agricultural works themselves, so they hired Brahmin tenants, who cultivated the land in return for a share.

In 1886, the Nepali government passed a law which converted all cultivated Kipat into Raikar tenure. What it meant was that all land in Illam could be claimed for ownership by whoever cultivating it at that time. The result was that the Limbus found themselves land lost and the Brahmins becoming landlords. The dominance of land gave the Brahmins the economical and then on the political clout.¹³

The continuing loss of tribal lands created profound economic and cultural stress for the Limbus. Their resentment led to a movement called 'Satya Hangma', which was an effort to combat the stress and cultural disorientation caused by the loss their land. In 1948, resentment over usurped tribal land exploded into a Limbu uprising in which dozens of Brahmins were killed.¹⁴ In 1968,

13. Thomas Cox., "Land Rights and Ethnic Conflict in Nepal", Economic and Political Weekly, June 16-23, 1990, p.318.

14. Ibid., p.320.

the Nepali government abolished the Kipat system, resulting in the loss of Limbus remaining tribal lands. Today, the Limbus are tenants on the lands of the Brahmins. They are a much exploited tribe. The Limbus along with the Chepangs and Tharu tribes show clearly in Nepal that a certain natural resources (which in this case is land) can lead to a conflictual scenario which can by its very live-wire nature explode into a local eco-system crisis.

The North-Eastern Quadrant of South-Asia

This region of India represents a large movement of ethnic populations across porous borders. In large part it stems from the pressure on the local resources.

A plethora of such problems include the simmering demand by migrant Nepalis for a 'Gorkhaland' in the state of West Bengal, the continuing tension between New Delhi and Kathmandu over the status of the so called 'terai Indians' on Nepal, the friction between Bhutanese and resident Nepalis in Bhutan and violent conflicts between the Chakma tribals in the Chittagong Hill Tracts and the encroaching Bengali plainsmen in Bangladesh.

The problems of transmigration, ethnic conflict and scarcity of resources interact in a highly complex way to

affect the environment of the region.¹⁵

Bangladesh

Of all the guerrilla wars going on today in the Indian sub-continent, none is so essential to the survival of an indigenous minority as the Chakma Struggle in Bangladesh's Chittagong Hill Tracts (CHTs).

Ethnic rivalry over the resources of the area threaten not just the Chakmas but all the Buddhist, Christian, Hindu and Animist tribes settled for centuries in the Chittagong hill forests between India, Burma and Bangladesh. During the last 16 years, these people have suffered oppression amounting to genocide from Bangladeshi officials and internal colonisers.¹⁶ As a result, over 80,000 have sought refuge in India between 1972 and 1988. This influx was witnessed in all the states of the North-East.

The CHT (5053 sq miles) is a largely inaccessible area containing natural resources like forests, arable paddy land, hydro-electricity, oil and gas in exploitable quantities. Exploiting the resource of the region at a

15. Sandy Gordan., "Resources and Instability in South-Asia", Survival, Vol.35, No.2, Summer 1993, p.73.

16. Jyoti Jafa., "Victims of Colonialism and Ethno-Centric Nationalism", Mainstream, June 16-23, 1990, p.77.

great cost of the fundamental rights of the indigenous people has led to the influx into the Indian states. Land alienation, plus a massive hydro-electric project on the Karnaphuli river caused the first Chakma migration. The Kaptai Dam, flooded 400 square miles between 1967-68, destroying Jhum land, rainforests and wildlife. More than 8000 self-sufficient tribal Jhumiyar families displaced by this dam received no compensation and were forced to become refugees in India and Burma.¹⁷

After Bangladesh's independence, a massive influx of non-tribals into the CHT occurred changing the demography of the region from being tribal dominated to being non-tribal dominated. The tribals demand for regional autonomy was looked upon by the government as being secessionist. Attacks by the Bangladeshi army and police led to the indigenous people taking up arms first in self-defence and then later as the mean to fight for their survival. The emergences of the Shanti Bahini guerrilla group, the Parbotya Chattagram Jana Sanghati Samity (PCJSS) and the CHT's People's Solidarity Association was the outcome of the Bangladesh's government atrocities on the tribals of the region.¹⁸ Of the various means of hitting at the Chakmas,

17. Ibid., p.79.

18. Ibid., p.81.

the one that affected them most was the deliberate damage of the local eco-system on which the tribals survived.

Assam

Conflict over scarcity of natural-resources and its induced environmental degradation can be seen in the North-East as whole. In Assam, the significant factor of the majority-minority conflict has been the widespread migration of people from Bangladesh, so much so that the Assamese fear of becoming a minority in their own state has driven them to separatist demands. They also fear that their resources - tea, oil and timber would be badly encroached upon.

There are many factors behind the migration that have provided the main focus of separatism in Assam. These include the quest for land on the part of land hungry Bengalis from the dry, heavily populated and poor province of Mymensingh in Bangladesh.¹⁹ Those forced out of Mymensingh by scarcity and overpopulation were hardy cultivators who were willing to take on the risks of cultivating the shifting flood-plains (known as Char land), whereas the Assamese at the time were not.²⁰ With the

19. T.S. Murty., Assam: The Difficult Years (New Delhi: Hemalayan Book, 1983), p.171.

20. S.K. Das., "Immigration and Demographic Transition in Assam 1891-1981", EPW, Vol.15, No.19, 1980, p.170.

tightening of the land situation within Assam, pressure was brought to bear on the flood-plain cultivators to give up their lands on the grounds that they were outsiders.

In Assam as also in the various other state of the region, two things can be deciphered: One, the influx of the refugees creates a minority-majority confluctual situation primarily over the natural resources of the area. Two, owing to the competition over the limited resources groups form terrorist organization in order to stake claim over the land they occupy.

Manipur

This small state in the North-East bordering Myanmar represents a conflictual crisis of two kinds: one, is the tribal strife within the State and the other is its porous boundary with the country Myanmar, where transmigration of refugees and across the border terrorist training are the chief features. The combination of these two has left the environment of the state in a shattered condition.

In a large part of Manipur, especially in the three eastern districts of Chandel, Ukhrul and Senapati, the simmering hostility between armed Kuki and Naga underground groups has left many dead and scarred the eco-system of the region.

THE KUKI AND NAGA RIVALRY OVER THE LIMITED RESOURCES has a history rooted in the realpolitik of the state's erstwhile Meitei (ethnic Manipuri) rulers. The kings had apparently brought in Kukis from Myanmar and other neighbouring areas and given them land to settle in the highlands in order to checkmate the original Naga inhabitants, who were traditionally defiant of royal authority. With time, the Kukis came to consider themselves as no less "indigenous" than the Nagas.

In May, 1993 trouble started as the Muivah-Swu faction of the National Socialist Council of Nagaland (NSCN) tried to cut into a traditional Kuki protectorate - the multi-hundred-crore - a year smuggling trade of Heroin which passes through Moreh on Chandel's border with Myanmar. As NSCN sought to levy "house tax" on Kukis, the Kuki outfits such as the Kuki National Army (KNA) came head on to meet the challenge. There followed a series of evictions - of Nagas from Kuki-majority areas under KNA threat and of Kukis from Naga majority areas under NSCN threat. In the ensuing war of attrition villages were razed, granaries burnt and forests destroyed. The KNA, owing to its fear of extinction has crossed into Myanmar and joined the Indo-Burma Revolutionary Front. It also has the support of the rebel Kachin Independent Army.

The rich tropical forests ensures a natural hideout for the terrorist in the region. It ensures the very survival of the various ethnic insurgent groups for whom it offers camouflage, shelter and food. 21

The 57th Mountain Division, which sees to all the counter-insurgency operations in the region employs jungle-warfare means to counter guerrilla organisations. In order to flush out the insurgent groups from their natural shelter in the forests, much bombing and shelling has been resorted to. This has resulted in the depletion of the forest. In the ensuing process much of the wildlife in the forms of rhinoceros' and tigers along with birds have suffered loss.

Central India

In the case of the tribal populations of central India, the nexus between resource issues and unrest is even more pronounced. These peoples originally occupied better lands, but with the coming of the Aryans, they were forced over many centuries to marginal land that, until recent times, remained forest. However, the progressive exploitation of the forest, upon which they depended for slash-and-burn agriculture, meant that they were often driven into the

21. Frontline, March 26 (p.40-43), April 9 (p.51-52), June 4 (p.99-101), July 30 (p.98-100), Sept. 10 (p.29-30), 1993.

hands of money-lenders. In consequence, many eventually became bonded labourers. The tribal response was primarily a reaction to the intolerable situation in which they found themselves. That this is so is borne out by the nature of the Naxalites attacks that are targeted at forest officials, landlords, money-lenders and merchants.²² In Bihar, a well-organized and violent movement developed with the specific purpose of obtaining the restoration of tribal lands. The most important of the so-called Naxalite groups is the People's War Group (PWG), a group that operates widely through the tribal areas of Andhra-Pradesh, Madhya Pradesh and Maharashtra, mounting attacks on landlords and money lenders and, in recent years, the police as well, using tactics that closely resemble those of the Tamil Tigers of Sri-Lanka. There is rising discontent in almost the entire middle Indian tribal belt, particularly on the issue of land and forest.

Punjab

The tragedy of Punjab apart from being an outcome of ethnic and communal conflict between two religious groups, is also one of ecological demands of the Green Revolution as an experiment in development and agricultural

22. Sandy Gordan., "Resources and Instability in South-Asia", Survival, Vol.35, No.2, Summer 1993, p.78.

transformation. The Green Revolution has been heralded as a political and technological achievement, unprecedented in human history. It was designed as a techno-political strategy for peace, through the creation of abundance by breaking out of nature's limits and variabilities. Paradoxically, two decades and more of The Green Revolution has left Punjab ravaged by violence and ecological scarcity. Instead of abundance, Punjab has been left with diseased soils, pest-infested crops, water-logged deserts and indebted and discontented farmers. Instead of peace, Punjab has inherited conflict and violence 3,000 people were killed in Punjab during 1988. In 1987 the number was 1,544. In 1986, 598 were killed.²³

The Punjab crisis is in large measure the tragic outcome of a resource intensive and politically and economically centralized experiment with food production. It cannot be totally said that the roots of conflict are religious in nature. It is not merely conflicts between two religious communities, but reflect cultural and social breakdown and tensions between a disillusioned farming community over the ecological degradation and a centralising State, which controls agricultural policy, finance, credit,

23. Vandana Shiva., Ecology and Politics of Survival (London: Sage, 1993), p.22.

inputs and prices of agricultural commodities. The Green Revolution had its social and ecological cost. The conflict in the State illustrates that ecological and ethnic fragmentation and breakdown are intimately connected and are an intrinsic part of a policy of planned destruction of diversity in nature and culture to create the uniformity demanded by centralised management systems.²⁴

The violence in contemporary Punjab goes against all conventional wisdom. The received view on societal violence identifies 'material scarcity' as the underlying determinant of man's inhumanity to man. From pre-neolithic times, it is argued, societal groups have always lived in environments too poor to satisfy their material needs. Nature has thus been seen as a source of economic scarcity, scarcity has been seen as a source of conflict over scarce resources and conflicts have in turn been seen as a source of violence.

The ecological and ethnic crises in Punjab can be viewed as arising from a basic and unresolved conflict between the demands of diversity, decentralization and democracy on the one hand and the demands of uniformity, centralization and militarization on the other. Control over nature and control over people were essential elements of

24. Ibid., p.13.

the centralised and centralising strategy of the Green Revolution. Ecological breakdown in nature and the political breakdown of society were essential implications of a policy based on tearing apart both nature and society. Conceptually and empirically it is argued that the assumption of nature is a source of scarcity, and technology as a source of abundance, leads to a creation of technologies which create new scarcities in nature through ecological destruction. The reduction in availability of fertile land and genetic diversity of crops as a result of the Green Revolution practices indicates that at the ecological level, the Green Revolution produced scarcity not abundance.

Three kinds of conflicts seem to have converged in creating what has been called the Punjab crisis. The first, is related to conflicts emerging from the very nature of the Green Revolution; such as conflicts over river waters, class conflicts, the pauperisation of the lower peasantry, the use of labour-displacing mechanisation, the decline in the profitability of modern agriculture etc., all heading to a disaffected peasantry engaged in farmers' protests. Second, is related to religio-cultural factors and the third to the sharing of economic and political power between the centre and state.²⁵

25. Maj. Rajiv Kumar, "Combating Terrorism in India", World Affairs, No.3, Dec. 91, pp.75-83.

The first of the cause has played a major role in shifting the Sikh farmers demands to a separate Sikh state. The ecological crisis of the Green Revolution is thus mirrored in a cultural crisis of the state.

Separatism tendencies led to organised terrorists groups which brought on tough counter-measures by the Union through its deployment of army, police and paramilitary forces. The modes of operation enforced in order to flush out the terrorist or hit their hide-outs have left a considerable dent in the environment of the region.

**CONCLUSION: A NEED FOR COOPERATION
ON CONFLICT - INDUCED ENVIRONMENTAL
ISSUES IN SOUTH-ASIA**

'We cannot command nature except by obeying her'.

Francis Bacon.

Environment is one of the greatest development challenges in South Asia today. The reason is not only the complexity of environmental issues themselves, but also the complex linkages among growth, population, poverty and the environment. Apart from the exponential growth in pollution, traffic and toxic water which mandate a series of sweeping Government policy changes and is Intra-state in nature, there is also a considerable pressure from ethnic clashes and the resultant migration on the forests and marginal lands: Inter-state in nature.

The region of South-Asia comprises a number of countries which have a need to develop a regional programme of cooperation in the protection of environment. Some of the countries in this region are geographically contiguous, a few of them are landlocked, while some have common rivers originating in one country and flowing through others. There is also a common sea coast line extending from Pakistan to the eastern part of the region in Burma. Afghanistan, Pakistan, India, Nepal, Bhutan, Bangladesh and Burma have common geological and geographic factors sharing a contiguous land mass, while Sri Lanka and the Maldives and the island countries of the Indian Ocean, surrounding the sea coast line of Pakistan, India, Bangladesh and Burma.

Given the geographical nature of the region, it is vital that the countries of the region cooperate amongst

themselves to manage environment and to deal with natural disaster that threaten them on a regular and in some cases, ever increasing basis. There should be a growing realization that all nations of the world are environmentally interconnected and interdependent. If there is one thing that can bring the nations of the world together, it is the common threat of a deteriorating global environment. Thus, national security and sovereignty in the traditional sense have lost significance on account of the common environmental threats.

However, notwithstanding the increasing internal problems and conflicting social, political and economic interests amongst the countries of the South-Asian region, the long-range prospects for environment protection in the future appears to be encouraging primarily, because there is now a much greater and growing understanding and awareness of the environmental problems and their implication for development and relationship amongst nations in the region; there also has been significant developments in the establishment and strengthening of national institutional and legislative frameworks, which could form the basis for the implementation of activities for environmental protection and there is a marked tendency amongst the countries of the region to combat the various problems that threaten the integrity of the environment jointly through preparation of a number of sub-regional environment

programme. The need of the hour, hence, is to consolidate the efforts and to evolve an enduring institutional mechanism to keep up the momentum. All countries of the region have thus individual and collective responsibilities to act and work together to preserve and improve the quality of life of their people.

The solution to environmental issues security in South-Asia does not lie in halting the processes of growth. Instead growth has to be made sustainable by recognizing that the remedial costs the world faces today are far less than what it will cost in future. It has also to be recognized that the quality of life and not just incomes matters and great deal of this can contribute to human happiness. Although broader policies of sustainable growth are formulated by individual national governments, most of the activities for the environmental security are undertaken at the local level. Nearly every nation now has a stated policy for environment and by treaty or statute, some national policies extend to international borders. Thus environmental problems, commonly regarded as local, regional or national, may have global or regional ramification. Some issues arise beyond the jurisdiction of any national government and are inherently international. Other issues may be localized in particular countries but are common to many others and are thus amenable to

international cooperative efforts. The study has focussed the attention on the problem that has transcended national boundaries it hence becomes imperative for the government of the region to develop bilateral or regional arrangements to deal cooperatively with matters that they cannot effectively manage separately.

Taking cue from the regional arrangement of Canada and USA in managing the Great Lakes and by a series of programmes launched by the UN against the desert locust in Africa, the South-Asian countries too have established a regional arrangement called the South Asia cooperative Environment Programme (SACEP). This is a perfect effort to manage the conflict related environmental problems.

The South-Asian countries has to look more towards the environmental aspect and shape and mould its policies both at the domestic and external level in relation to the fragile eco-system.

It is also significant in the fact that how conflict induced environmental degradation can cut across boundaries and bring a closer cooperation between neighboring states.

Environmental concern can be a great bond, and much will hence be benefitted in South-Asia.

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